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ABSTRACT

In response to the need to develop reliable methods of evaluating Texas students' achievement of essential competencies, this study was designed to develop multiple-choice test items in food and nutrition in all comprehensive homemaking education courses, the semester course in food and nutrition, and all occupational methods of teaching food and nutrition to students with varying abilities. In addition, guidelines for developing non-testing devices for determining students' achievement of specific essential competencies in food and nutrition were determined and expanded upon. Eleven objective tests designed to test the subject area of food and nutrition, including 1,112 multiple-choice test items, were administered to 1,146 students enrolled in vocational home economics education courses in Texas. Items field-tested in this study were gathered in two ways: (1) identification and revision of appropriate test items found in the literature, and (2) development of test items by the research team based on the essential competencies and information found in state-adopted textbooks. Test items categorized by level of difficulty are presented in numerous tables. All tests developed for the study had a high level of reliability. A major factor contributing to this could be the detailed test administration instructions developed for the study, which reduced errors. It was also found that non-testing methods would be needed for some psychomotor skills, and other methods were needed for assessing some students in vocational education for the handicapped who did not respond well to written, multiple-choice tests. Recommendations were made to develop further test items so that they correlate with essential competencies in the Texas standards, to continue the validation and field-testing procedures used, and to develop non-testing evaluation instruments. (KC)

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FINAL REPORT

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INSTRUCTIONAL ACTIVITIES IN VOCATIONAL HOME ECONOMICS

CAMILLE G. BELL
PROJECT DIRECTOR
TEXAS TECH UNIVERSITY

LINDA R. GLOSSON
PROJECT CO-DIRECTOR
TEXAS TECH UNIVERSITY

VIRGINIA C. FELSTEHAUSEN
PROJECT CO-DIRECTOR
TEXAS TECH UNIVERSITY

JUNE 1985

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Advisory Committee members were:

Betty Keethly, City Supervisor
Vocational Home Economics
Waco, Texas 76710

Dr. Gwen Aldredge
Home Economics Department
College of Arts and Sciences
Baylor University
Waco, Texas 78798

Dr. Dewey Mays
Curriculum Director
Fort Worth ISD
Fort Worth, Texas 76107

Judy Heatherly, Director
Vocational Home Economics Education
Texas Education Agency
Austin, Texas 78752

Gay Nell McGinnis
Occupational Education Specialist
Vocational Home Economics Education
Texas Education Agency
Austin, Texas 78752

Dr. Patsy Hallman
Home Economics Department
Stephen F. Austin State University
Nacogdoches, Texas 75961

Dr. Sue Thompson
Home Economics Department
Southwest Texas State University
San Marcos, Texas 78666

Dr. Sue Jones-Butts, R.D.
Home Economics Department
Stephen F. Austin State University
Nacogdoches, Texas 75961

Dr. David F. Culclasure, Director
Staff Development and Special Education
San Antonio State Hospital
San Antonio, Texas 78223-0310

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Exploratory Homemaking

Thelma Maxey
Lorenzo High School
Lorenzo, Texas 79343

Phyllis Snow
Stephen F. Austin High School
Bryan, Texas 77801

Jackie Tidwell
Cushing High School
Cushing, Texas 75760

Pamela Champagne
Central Junior High
Nederland, Texas 77627

Estelle Johnson
Baker Junior High
Corpus Christi, Texas 78411

Homemaking I

Emma Sims
Fort Hancock High School
Fort Hancock, Texas 79839

Sharon Anderson
Alpine High School
Alpine, Texas 79830

Sharon Winkles
John Jay High School
San Antonio, Texas 78227

Debbie Winslow
Edinburg High School
Edinburg, Texas 78539

Kelly Taylor
Wylie High School
Wylie, Texas 75098

Homemaking II

Sherry Trujello
Lubbock High School
Lubbock, Texas 79401

Bonnie Cobb
Eustace High School
Eustace, Texas 75124

Leslie Smith
Godley High School
Godley, Texas 76044

Lana Gates
Community High School
Nevada, Texas 75073

Nita DeGrand
Nacogdoches High School
Nacogdoches, Texas 75963

Juanita S. Johnson
Crosby High School
Crosby, Texas 77532

Homemaking III

Juanita S. Johnson
Crosby High School
Crosby, Texas 77532

Dorothy Vacek
Corsicana High School
Corsicana, Texas 75110

Allera Black
Sulphur Springs High School
Sulphur Springs, Texas 75482

Connie Smith
O'Donnell High School
O'Donnell, Texas 79357

Diane Wunderlich
Rice Consolidated High School
Altair, Texas 77412

Linda Hailey
Aledo High School
Aledo, Texas 76008

Debbie Jackson
Pinetree High School
Longview, Texas 75608

Food and Nutrition Semester Course

Margaret Berry
Plainview High School
Plainview, Texas 79072

Jane Gerardi
Trinity High School
Euless, Texas 76039

Doris Schwausch
Pflugerville High School
Pflugerville, Texas 78660

Julie Howerton
Burleson High School
Burleson, Texas 76028

Sally Darmstarter
Huntington High School
Huntington, Texas 75949

Home Economics Cooperative Education (HECE)

Mildred Jacob
Brenham High School
Brenham, Texas 77833

Doris Schwausch
Pflugerville High School
Pflugerville, Texas 78660

Judy Weatherford
North Lamar High School
Powderly, Texas 75473

Susan Jordan
Decatur High School
Decatur, Texas 76234

Pre-Employment Laboratory Education (PELE)

Pat Lovelady
Tascosa High School
Amarillo, Texas 79103

Joan Barker
Madison High School
San Antonio, Texas 78247

Jan Henderson
John Jay High School
San Antonio, Texas 78227

Janis Meeby
Garland High School
Garland, Texas 75040

Mary K. Plemmons
Plano E. Senior High School
Plano, Texas 75074

Coordinated Vocational-Academic Education (CVAE)

Beth Brian
Brownfield High School
Brownfield, Texas 79316

Phyllis Edminson
Round Rock High School
Round Rock, Texas 70664

Dorothy Brown
Daingerfield High School
Daingerfield, Texas 75638

Doris Starkey
Brownwood High School
Brownwood, Texas 76801

Kim Cesak
Landrum High School
Houston, Texas 77055

Vocational Education for the Handicapped (VEH)

Eileen Emch
Vocational Home Economics
Irving High School
Irving, Texas 75061

Fannie Brown
Edwards Education Center
Beaumont, Texas 77705

Sandra Gilliland
Cleburne High School
Cleburne, Texas 76031

Jeanette Young
Levelland Junior High
Levelland, Texas 79336

Joan Scheicher
Kirkpatrick High School
Fort Worth, Texas 76106

Betty Moore
Marlin High School
Marlin, Texas 76661

Oralia Perez
Hanna High School
Brownsville, Texas 78520

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Sue Stanford
Occupational Education Specialist,
Area I
Plainview, Texas

Cindy Gruner
Occupational Education Specialist,
Area II
Big Spring, Texas

Sharon Glassock
Occupational Education Specialist,
Area III
Houston, Texas

Marilyn Johanson
Occupational Education Specialist
Area IV
Stephenville, Texas

Virginia Chancelor
Occupational Education Specialist
Area V
Denton, Texas

Nelma Dodd
Occupational Education Specialist,
Area VI
Sulphur Springs, Texas

Phoebe Denney
Occupational Education Specialist,
Area VII
Austin, Texas

Ruth Wingo
Occupational Education Specialist,
Area VIII
Waco, Texas

Gwen Moore
Occupational Education Specialist,
Area IX
Crockett, Texas

Bobbie Moore
Occupational Education Specialist,
Area X
Corpus Christi, Texas

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The report is dedicated to all the persons who have given their time so graciously and generously. It is hoped that the results of this study will enhance and lead toward a more effective method of evaluation in secondary vocational home economics education in Texas and assist students in achieving the identified essential competencies in vocational home economics education.

Camille G. Bell, Project Director
Linda R. Glosson, Project Co-Director
Virginia C. Felstehausen, Project Co-Director

June, 1985

Chapter I

Overview of Study

Recent Texas State legislation on education, H.B. 246 mandated essential elements to be taught in each discipline at all levels. These elements have provided a basis to revise all curricula throughout public schools. This process has involved transposing the essential elements into essential competencies, selecting subject matter concepts necessary for students to know in order to achieve the competencies, developing instructional activities that give students a variety of ways to achieve the essential competencies, and finally, developing evaluation devices that will document students' achievement of the essential competencies. These components of curriculum are interrelated and interdependent.

The Home Economics Curriculum Center, funded by the Texas Education Agency and located at Texas Tech University, has focused upon objectives/competencies and instructional activities designed to help achieve the desired learning outcomes. However, in the majority of guides for comprehensive homemaking and specialized courses, evaluation has been limited to learning experiences which provide feedback to teachers about students' progress toward competency/objective achievement.

With the legislative mandate that students achieve the essential competencies, more emphasis must be given to evaluation techniques designed to document students' achievement of the essential competencies. The Program Director of the Vocational Home Economics Education Division of the Texas Education Agency suggested the area of food and nutrition as being the primary area of research for the study.

OBJECTIVES

The major purpose of the project was to correlate selected essential competencies in the area of food and nutrition with evaluative techniques appropriate for courses at all levels offered in secondary vocational home economics education in Texas. Objectives of the study were:

1. To determine evaluation methods contributing to the achievement of selected essential competencies in the area of food and nutrition in vocational home economics education in Texas.
2. To develop and validate pencil and paper and performance activities which will determine student achievement of specific essential competencies in the area of food and nutrition in vocational home economics education in Texas.
3. To identify essential competencies in vocational home economics education that could be taught and evaluated through the use of computers and/or interactive instructional television or video.
4. To determine evaluative techniques that are appropriate for special needs students in the area of foods and nutrition in vocational home economics education.
5. To promote equal access to vocational education through development of bias-free written test items.

RESEARCH QUESTIONS

The major formative research questions examined in the study were:

1. What is an effective procedure for developing multiple-choice test items that determine students' achievement of specific essential competencies in vocational home economics education?
2. Can the reliability of multiple-choice test items taken by students from all ten educational areas throughout the State of Texas be established?
3. What are some non-testing methods for assessing students' achievement of essential competencies?
4. What evaluation techniques are appropriate for special needs students?
5. What types of characteristics of evaluative techniques would promote equal access to vocational home economics education?

BASIC ASSUMPTIONS

The following assumptions were basic to conducting the study:

1. It was assumed that test items and other methods of evaluation identified through a review of curriculum materials for vocational home economics education could be adapted for the essential competencies for the total program in Texas.
2. It was assumed that vocational home economics education students participating in the study would be conscientious when responding to multiple-choice test items.
3. It was assumed that the essential competencies identified for specific courses in the total vocational home economics education programs in Texas could be taught.

DEFINITION OF TERMS

Discriminating - indicates the extent to which there is a satisfactory degree of difference between the high-achieving and low-achieving students.

Essential competencies - behavior which was derived from the essential elements mandated by the legislature in H.B. 246.

Interactive video - computer control of a video playback device which allows individuals to view one program in different ways depending upon their responses.

Non-testing evaluation devices - methods of evaluation, other than traditional pencil and paper tests, which generally test students' performance or a product. Such devices include rating scales, checklists, self-reports, and audio-visual techniques.

Objectivity - the extent to which personal judgment is eliminated from the rating or scoring situation.

Occupational Home Economics Education - methods of instruction designed to prepare individuals for occupations related to home economics subject areas.

Reliability - indicates the accuracy or consistency with which the instrument measures whatever it is meant to measure.

Special-needs students - students identified as having a learning disability which requires alternative means of instruction and evaluation to meet the student's requirements and limitations.

Usability - the degree of convenience, availability, serviceability, advantage, and practicality of the instrument.

Validity - indicates the degree to which the instrument measures what it claims to measure.

Vocational Home Economics Education - organized educational programs which prepare males and females for the occupation of homemaking, an occupation requiring the knowledge and skills necessary for optimum quality of life for individuals and families and are interrelated in the subject areas of child and family development, foods and nutrition, consumer education, home management, clothing and textiles, and housing.

SUMMARY

With the need to develop reliable methods of evaluating students' achievement of essential competencies, the study was designed to develop multiple-choice test items in food and nutrition in all comprehensive homemaking education courses, the semester course in food and nutrition, and all occupational methods of teaching food and nutrition to students with varying abilities. In addition, guidelines for developing non-testing devices for determining students' achievement of specific essential competencies in food and nutrition were determined and expanded upon.

Chapter II of this report presents a description of the methods and procedures used in the development of multiple-choice test items.

Chapter III presents descriptions and examples of non-testing devices appropriate for food and nutrition courses.

Chapter IV presents data related to the field-testing of multiple-choice test items.

Chapter V presents conclusions and implications drawn from the study.

Chapter II

Methods and Procedures Utilized in the Development of Multiple-Choice Test Items

The project was conducted cooperatively by the Home Economics Education Department, the Home Economics Curriculum Center at Texas Tech University, and the Vocational Home Economics Education Division in the Texas Education Agency. The methods and procedures of the project involved the following: selection and utilization of an advisory committee, development of the multiple-choice test items, review of the multiple-choice test items, field testing of the multiple-choice test items, item analysis of the multiple-choice test items, and compilation of non-testing evaluation instruments and procedures. A summary and description of these procedures follows.

Persons Assisting with the Project

Persons assisting the project staff in carrying out the project included the advisory committee, the Vocational Home Economics Education director and staff members of the Texas Education Agency, secondary teachers of Texas Vocational Home Economics Education classes, and students enrolled in Vocational Home Economics Education classes in Texas. Work on the project began in September 1984 and concluded in June 1985.

An advisory committee provided outside input regarding the project. This group was comprised of the project staff, Texas Education Agency Vocational Home Economics Education staff, college and university teachers knowledgeable in foods and nutrition and vocational home economics education, a vocational home economics city supervisor, a school district curriculum director, a state hospital staff development director, and restaurant industry representatives. The names, titles, and addresses of advisory committee participants are included in Appendix A.

The advisory committee met in Austin at the Texas Education Agency on October 17, 1984. The advisory committee suggested that a literature search be conducted to identify test items on food, nutrition, or food service. From these identified test items, several multiple-choice items could be revised and/or developed for each of the essential competencies in food and nutrition in all courses in Consumer and Home Economics Education and in all methods of instruction in the Occupational Home Economics Education in Texas. The committee further recommended that test items be field tested by teachers in all phases of vocational home economics education.

Copies of correspondence with members of the advisory committee and a copy of the advisory committee meeting agenda are included in Appendix B.

Development of the Multiple-Choice Test Item Pool

Multiple-choice test items were developed to measure the students' knowledge and comprehension of each of the essential competencies in food and nutrition in all courses in Consumer and Home Economics Education and in all courses related to methods of instruction in the Occupational Home Economics Education course. Members of the advisory committee recommended that multiple-choice test items be developed and field-tested in the study. This recommendation was based on the fact that of the various objective test items used, multiple-choice test items are the most widely applicable test items for measuring achievement. This type of test item effectively measures various types of knowledge, as well as complex learning outcomes. Well constructed multiple-choice test items also are less prone to be ambigious or vague. These objective test items are relatively free from response sets; the tendency to favor a particular alternative when the correct answer is not known. Finally, the use of plausible distractors or alternatives lends the item to item analysis. Through such diagnosis, factual errors and misunderstandings are detected paving the way for item improvement. The pool of test items was developed in two ways: (1) identification and revision of suitable questions available in existing Vocational Home Economics Education materials, and (2) generation of test items to supplement selected items and/or supply items for essential competencies for which no test items could be identified.

Initially, a review was made of all foods and nutrition curriculum materials available from a variety of sources. Materials reviewed included teacher and student guides, teacher handbooks, curriculum guides, and textbook instructor's manuals. From these sources possible test items were selected. The essential competency to be evaluated by each test item was identified. Subsequently, identified multiple-choice test items were reviewed, evaluated, and edited by the project staff. Essential competencies not included in the original test item pool were identified.

Additional multiple-choice test items were written by individual project staff members with cross-evaluation done by other project staff members. Guidelines suggested by the Vocational Home Economics Education Director and staff of the Texas Education Agency were followed in the writing and editing of test items.

Separate and distinct pools of multiple-choice test items were identified, revised, and/or developed for each of the following Texas Vocational Home Economics courses: Exploratory Homemaking, Comprehensive Homemaking I, Comprehensive Homemaking II, Comprehensive Homemaking III, Food and Nutrition Semester Course, and the Food Production, Management and Service Courses. Each test item pool was evaluated by the Vocational Home Economics Education Director and staff of the Texas Education Agency. Revisions reflecting their suggestions were made and the tests were mailed to advisory committee members for evaluation. Additional suggestions were made by the advisory committee regarding the appropriateness of items, ambiguity of question, and the level of item difficulty. Changes suggested by the advisory committee were incorporated and the revised tests were again reviewed by the Vocational Home Economics Education Director and staff of the Texas Education Agency. Through this development process, pools of test items were established for each Consumer and Homemaking Education course and for all courses related to Occupational Home Economics methods of instruction in Texas were established. Final test formatting resulted in two test versions for each Consumer and Homemaking Education course and all courses related to Occupational Home Economics methods of instruction in Texas, with the exception of Exploratory Homemaking. Attached to each test version was a student information sheet containing six multiple response items. Completed prior to taking the test, these questions were designed to gather information related to the students' present grade level, present age, sex, ethnic heritage, and previous enrollment in Vocational Home Economics Education courses, including all methods of instruction related to Occupational Home Economics and Exploratory Homemaking.

Equal Access in Test Development

Special consideration was given to each multiple-choice test item to insure that it was free from gender-related references, ethnic bias, or other conditions which would not promote equal access to vocational education. Ms. Judy Heatherly, Director of Vocational Home Economics Education, Texas Education Agency, and Ms. Gay Nell McGinnis, Occupational Education Specialist, Texas Education Agency, were especially alert to considering equal access and gave valuable input in this area.

Test Packet Materials Development

Concurrent to test item identification and/or development, two additional items necessary for the completion of this study were developed. These items were(1) cover letters to each participating teacher and (2) detailed instructions designed to be read to students immediately before test administration.

Cover letters reviewing the purpose of the study, identifying enclosed test materials, and outlining the method for returning the completed computerized answer sheets were developed. Detailed instructions were designed to standardize the test administration process as much as possible. Instructions were also utilized to provide guidance to the teacher and students regarding the correct method for test administration and test answer sheet completion.

Cover letters and instructions were reviewed by staff at the Texas Education Agency and the advisory panel members. Suggestions for revision were incorporated and a copy of the cover letter and detailed instruction form are given in Appendices C and D, respectively.

Field Testing

Field testing of the multiple-choice test items was done to establish validity and reliability of the items. Texas Education Agency Vocational Home Economics Education staff members identified school districts of various sizes in all parts of the state. This provided a representative cross-section sample of the 1984-1985 Texas vocational home economics education student population. Classes in these schools were targeted as appropriate sites for Fall Semester 1984 field testing and constituted the invited sample. Letters were mailed soliciting secondary classroom instructors' participation in the field testing of selected test items. These letters were mailed in November 1984 to 68 teachers in the subject areas of Exploratory

Homemaking, Homemaking I, Homemaking II, Homemaking III, Food and Nutrition Semester Course, Home Economics Cooperative Education (HECE), Coordinated Vocational-Academic Education (CVAE), Pre-employment Laboratory Education (PELE) and Vocational Education for the Handicapped (VEH). A follow-up reminder letter was mailed to those teachers failing to respond to the initial request. After both mailings, responses were received from 51 teachers.

Because of a delay in securing the necessary approvals from the Texas Education Agency Vocational Home Economics Education staff and members of the advisory committee, the field testing of the test items was postponed until the spring semester 1985. When teachers were notified of this delay, they were asked to indicate whether or not they would be teaching the course originally selected for field testing again in the spring, 1985, semester. Additional schools were identified by the Texas Education Agency Vocational Home Economics Education staff to replace those classes in the original sample which were not being taught in the spring.

In March, a letter verifying the plans for field testing was mailed to all teachers who had agreed to participate in this phase of the project. Tests were distributed to the schools during April and the first week of May 1985. Correspondence with all study participants is shown in Appendix E.

For each of the identified Vocational Homemaking courses and courses related to occupational method of instruction, except Exploratory Homemaking, two field test versions of the test were sent to the participating teachers. Sufficient copies of each version were provided for one-half of the students enrolled in the class(es) to take the exam. Multiple copies of computerized answer sheets were included in the packet of test materials. Teachers were asked to read the detailed instructions to the students immediately before administering the test. A grading key for the convenience of those teachers who wished to use the exam as part of their course evaluation was also included. However, all completed computerized answer sheets were returned to Texas Tech University for grading.

Multiple-Choice Test Item Analysis

It is critical that the pool of test items be as free from deceptive and ambiguous questions as possible. Item analysis procedures allowed the project staff to discover test items that were ambiguous, mis-keyed, too easy or too difficult, and/or nondiscriminating. Item analysis enhanced the technical quality of the examination by pointing out options that were nonfunctional and that should be improved or eliminated.

The item analysis procedures selected for the multiple-choice test items included determination of a discrimination index and the level (or degree) of difficulty. The discrimination index indicated a measure of the extent to which an item was capable of separating the most from the least knowledgeable students or measuring the extent to which items were capable of determining individual differences among students. Item difficulty level indicated the proportion of individuals responding correctly to an item. Thus the larger the proportion, the easier the item was.

Item analysis also allowed the project staff to examine the responses of the students in the upper and lower groups on each option per test item. For item quality and improvement, two principles were followed: (1) each alternative in a multiple-choice item should be plausible and therefore should be selected by students in the upper and the lower groups and (2) all distracters (incorrect alternatives) should, if possible, discriminate negatively. This meant that incorrect options should have been selected less frequently by the upper group than by the lower group.

Validity of the tests was established by the panel of experts comprising the advisory panel. Reliability for each test was determined using an internal consistency method of Kuder-Richardson 20 reliability coefficient.

Use of Instructional Activities

While the title of this project is Development of Instructional Activities in Vocational Home Economics, the majority of the project staff's efforts were directed towards the development of methods of testing and non-testing means of evaluation for specific essential elements in the area of food and nutrition in vocational home economics. In past years, considerable time and effort has been devoted to the development of instructional activities for the various instructional areas of vocational home economics. This is evidenced by the number of excellent curriculum guides and instructional activities references available at and developed by staff members at the Home Economics Curriculum Center. Because of the paucity of information related to valid means of evaluation for vocational home economics, project staff decided to utilize and promote existing instructional activities and to promulgate the need for comprehensive and valid means of evaluation for vocational home economics.

Development of Non-testing Evaluation Instruments and Procedures

Pencil and paper tests are the most traditional means of evaluating students' achievement of identified behavioral objectives written in the cognitive domain. If well prepared and carefully thought through, this method of evaluation can be effective and efficient in assessing students' achievement of competencies. A number of the essential competencies in food and nutrition for all courses in Consumer and Home Economics Education and in all courses related to the Occupational Home Economics Education methods of instruction course cannot adequately be measured through paper-and-pencil tests. To thoroughly examine means of testing for these competencies, a compilation of non-test evaluation instruments and procedures was undertaken. A thorough search of the literature was undertaken in an attempt to locate usable materials. Additionally, letters requesting copies of teaching/evaluation materials were sent to 104 Home Economics or Home Service Departments, Public Relations, or Marketing Offices of private industry and product promotion groups requesting copies of their teaching materials. A copy of the letter requesting evaluation materials is included in Appendix F. Appendix G indicates those companies contacted regarding non-testing devices. Responses were received from 29 companies.

A critical examination was done of each of the non-test evaluation instruments. The materials were evaluated as to their appropriateness for and usability in the secondary classroom, purchase cost or cost of reproduction, and value in measuring identified learning outcomes. An annotated bibliograpny concerning the reviewed materials is included in Appendix H.

Information related to non-testing methods of evaluation are of particular interest in this project because of the requirements they meet for special needs students. These students, often with various learning disabilities, require methods of evaluation other than traditional paper-and-pencil tests which may not fully determine the student's level of understanding and ability.

Non-testing methods, such as checklists and scorecards, are often perceived as less threatening than pencil-and-paper tests. These methods focus on the student's ability to perform, a product produced by the student, or the student's ability to understand and analyze given situations. While still ascertaining the student's achievement of essential competencies, non-testing methods of evaluation take into account the student's learning disabilities.

Because of the important role this type of testing method has in student evaluation, an in-depth discussion of non-testing methods of evaluation, guidelines for construction, and examples of each related to the area of foods and nutrition is given in Chapter III of this report.

Chapter III

Methods and Procedures for Developing Non-testing Devices

An Overview of Evaluation

For most students and teachers, the word evaluation brings to mind the event of "test-giving." For some teachers and students, evaluation is conducted only at the end of a unit, course, or other specific block of material. The tests given at the end of these teaching blocks are often written tests, given to determine a student's knowledge of the subject.

To help teachers and students develop a more global understanding of evaluation, a few basic guidelines about evaluation and its purposes may be beneficial.

EVALUATION IS:

- the extent to which a student is reaching a goal.
- an integral part of the total teaching-learning process.
- is of little value unless the results promote improvement and/or change.
- a process by which information is provided to serve as a basis for decisions about teaching-learning situations.
- maximized, its potential is best realized, when it is continuous or done at frequent intervals. When evaluation is conducted in this manner, new goals and experiences may be developed from collected data.
- a learning experience. Not every evaluation administered to a student must be graded. Even if graded, the resulting scores can serve purposes other than a grade assigned to the course. Both the student and the teacher should be aware of the information yielded from evaluation, other than grades. Students may determine the effectiveness of their study techniques, their

understanding of the material as part of a larger topic, and their ability to complete a task. Teachers should consider evaluation results as an indicator of their ability to communicate material effectively and as one measure of their effectiveness as teachers.

- most beneficial when it is done "with" the student. Cooperative forms of evaluation help build accurate self-concepts and an understanding of the purpose and process of evaluation.
- a diagnostic tool to provide both the student and teacher with timely feedback concerning their efforts at teaching and learning and lays the groundwork for future plans.
- best when based on clearly stated objectives. The teacher must determine the intended use of the results of evaluation before the method of evaluation is selected. Because evaluation serves many purposes, no one method of evaluation can be used to meet all of these purposes.
- a determination of the worth or value of something arrived at through a quantitative description and a value judgment. Evidence is gathered and weighed as the evidence reveals changes in student behavior as they progress towards the stated objectives. The gathering process of this evidence includes all methods of evaluation related to all domains of affective, psychomotor, as well as cognitive learning. When the element of "value judgement" is added, the teacher must consider the total person; their needs, interests, as well as progress.

The teacher's role in evaluation includes:

- identifying educational objectives sought.
- determining the educational experiences best suited to help the student achieve the stated objective.

- evaluating the degree to which desired change in student behavior has taken place and the degree to which educational objectives have been reached.
- reteaching, usually in a different manner, the material which evaluation indicates was not learned through previous instruction.

Evaluation of student behavior in terms of educational objectives is a complex task. The method of evaluation should be keyed to the major intent of the stated educational objectives. In many ways, the objective will indicate the appropriate method of evaluation to be used.

The study deals with the two methods of evaluation. Testing devices are generally referred to as objective and essay tests. For this study, multiple-choice test items were identified, revised, and/or developed for field testing.

Non-testing devices, while not field-tested in the study, are an important part of evaluation. This is especially true of home economics, due to the variety of types of learning which occurs in home economics classes. In an effort to supply the teacher with relevant material on the types of, uses of, and methods of construction for the various non-testing devices, the following instructional section has been developed.

The researchers for this study hope it provides teachers with a deeper understanding of the process of evaluation and the potential of evaluation methods beyond traditional testing.

Non-testing Methods of Evaluation

As previously discussed, pencil and paper tests are the most traditional means of evaluating students' achievement of identified behavioral objectives written in the cognitive domain. When well-prepared and carefully thought through, this method of evaluation can be effective and efficient in assessing students' achievement of competencies.

Students with learning disabilities often do poorly on traditional written tests. Their poor performance is most often related to the method of evaluation rather than the students' lack of comprehension of the subject matter or their ability to complete a task. Also, objectives written in the psychomotor and affective domains are often poorly evaluated via written tests. For special needs students and objectives written in the affective and psychomotor domains, as well as the cognitive domain, non-testing methods of evaluation are the most relevant means of evaluation.

As shown in the matrix below, certain evaluative techniques are more applicable to some domains of learning than others.

Evaluation Device	Domains of Learning		
	COGNITIVE	AFFECTIVE	PSYCHOMOTOR
Written Tests	X		
Observational Techniques		X	X
Reporting Techniques	X	X	
Audio-visual Techniques		X	X
Sociometric Techniques		X	

Specifically, non-testing forms of evaluation are most often used to determine the progress of students in the skill areas, such as speaking, social, or physical; work habits, such as time usage or use of resources; social attitudes; and interests. The teacher must decide which non-testing method is best suited to the measurement of specific learning outcomes. Regardless of the type of non-testing device being developed or used, the instrument should be valid, reliable, objective, discriminating, and useable. These same important characteristics also apply to written tests.

Non-testing methods of evaluation may be used alone or in conjunction with testing devices to determine the status and progress of students. In developing non-testing means of evaluation, the dimensions tested must:

1. be measurable,
2. provide sensory data, and
3. be found in more than one individual.

Types of non-testing evaluation instruments most important for testing essential competencies are:

1. Observational devices - checklists, scorecards, and rating scales.
2. Reporting forms - project reports, activity reports, logs and diaries, questionnaires, and anecdotal records.
3. Audio-visual techniques - tape recordings, films and filmstrips, photographs and transparencies, pictures, cartoons, graphs, charts, and computer-assisted evaluation.
4. Sociometric techniques - sociograms and social distance scales.

While several non-testing evaluation instruments applicable to food preparation, food service, and career development in the area of food and nutrition have been located, the following guidelines are offered to provide assistance to secondary vocational home economics teachers in developing their own non-testing evaluation instruments.

Guidelines for Developing Non-testing Evaluation Instruments

Certain basic information is necessary for every evaluation instrument, both written and non-testing. These pieces of basic information are:

1. Identifying Information
    - A. Title of the test for easy filing and future reference.
    - B. Space for the student's name.
    - C. Space for when the test was given.
    - D. Space for the title of the class or course.
2. Directions, which should
    - A. be clear and concise.
    - B. be adequate in that they tell students all they need to know about taking the test.
    - C. be written at the student's language level.
    - D. precede each different type of test item. If an evaluation consists of a rating scale and an objective test consisting of true-false and multiple choice test items, directions should be given before each type of evaluation method.
    - E. have key words underlined or capitalized (i.e., BEST or not).

Non-testing Evaluation Devices: Construction Tips and Examples

1. Observational Devices

A. Checklists - devices used for recording whether or not a characteristic is present. It contains items to be responded to with a number, word, or check in a space provided. In completing the checklist, the student must think about the factors listed and evaluate the product or situation for their existence. A true checklist does not allow space for comments. Tips for construction include:

1. listing steps in order that they occur in the procedure being evaluated.
2. identifying and clearly stating specific actions or objectives.
3. eliminating overlaps or stating the same thing twice.
4. making statements clear and concise.
5. providing grammatical consistency.
6. consistently using either a complete, short sentence, or a word to describe the characteristics being looked for.

7. making all statements positive.
8. making all directions clear.
9. repeating headings for columns on every page.
10. providing for positive and negative responses, such as Yes-No and Never-Always.
11. adding middle responses, such as Sometimes or Usually. These types of responses make the rating more realistic.
12. providing a blank for a total score, if suitable.
13. providing space for needed identifying information.
14. providing a space for comments, if desired.

An example of a checklist used for observing a student during a foods lab is:

OBSERVATION OF FOOD PREPARATION

Student's name ______________________ Date __________________

Class ______________________

Directions: You are an observer today. You are going to observe ______________________ as they work. Watch for the following behaviors and check the degree to which each occurs. Make any appropriate comments.

POINTS TO LOOK FOR	ALWAYS	SOMETIMES	NEVER	COMMENT
1. Work space is clean and orderly.				
2. Works quietly, in a business-like way.				
3. Appears calm and sure of what is to be done.				
4. Dishes and equipment used are cleaned after each use.				
5. Follows safety rules in the kitchen.				
6. Handles food and equipment properly.				

As mentioned, a true checklist does not provide a space for comments. This may be a disadvantage in some situations. The teacher must decide whether this feature would be of benefit to the students in expressing their attitudes about or in analyzing the product or situation.

B. Scorecards - devices in which points are assigned to phrases indicating standard criteria or quality of aspects of a product or skill. In developing scorecards, a perfect score is attached to each dimension measured. In teacher-developed scorecards, the teacher has control over the points assigned to each characteristic evaluated. This may be used to emphasize those aspects of the product or procedure which are more crucial than others. When constructing scorecards, one needs to:

1. have directions stated clearly and concisely.
2. allow space for identifying information.
3. outline the dimensions or aspects to be scored.
4. list the dimensions in a logical order.
5. use textbooks or other resources to describe dimensions.
6. have all dimensions grammatically consistent.
7. make dimensions all positive or all negative.
8. provide a blank for the total score.
9. provide a space for each dimension's score.
10. phrase each phrase concisely.
11. allow space for comments next to each dimension being evaluated.
12. assign a score value to each dimension.

When using scorecards, teachers may discover that larger scores may result in a greater variation in the final evaluation. Objectivity of the instrument will be increased if each dimension being evaluated is accompanied by a description of the "ideal" conditions. An example of a partial scorecard is shown on the next page.

FOODS SCORECARD - MUFFINS

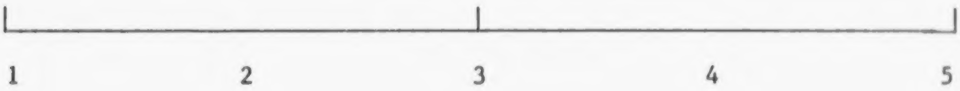
Directions: Read each of the following characteristics below and judge your product based on the description given for each characteristic. Place the score you assign in the space provided. This number cannot exceed the highest possible score possible for that characteristic. Any comments you have may be placed in the last column. Please total your scores!

CHARACTERISTICS	Highest Score Possible	Your Score	Comments
Appearance: Golden brown, slightly rounded top, "pebbled" look.	4		
Texture: Slightly moist, free from tunnels, uniform medium texture.	4		
Tenderness: Breaks easily without crumbing, light, tender.	4		
Flavor: Pleasant, not bitter, no flat taste.	4		
TOTAL SCORE	16		

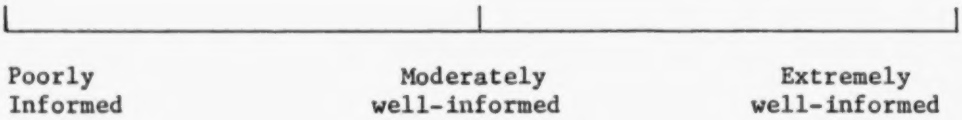
C. Rating scales - instruments in which points are assigned to vivid descriptions ranging from desirable to undesirable, that describe levels of the quality for each aspect of a product or skill. Rating scales direct the observation toward specific and clearly defined aspects of behavior. The behavior is based on a continuum with descriptors given for best, average, and worst examples. By using descriptors at various levels of performance or competency, the well-constructed rating scale provides a common frame of reference.

Rating scales are usually constructed using one of three formats:

1. numerical - the student rates a descriptor by placing a check mark on a continuum to indicate the degree to which a characteristic is present. A numerical rating scale would look like the example below.



2. graphic - students place a check mark on a continuum, rating a characteristic from excellent to average. An example of a graphic rating scale is:



3. descriptive - a characteristic is rated on a continuum with descriptors given at each level: poor, average, and excellent. The descriptors must be clearly written and truly represent the best, the worst, and the average. A facet listed in one descriptor must be listed in other descriptors given along the continuum for that characteristic. Descriptive rating scales are illustrated in the partial rating scale given below for student performance in a foods lab.

I. Manner of Approach to the Job

5	4	3	2	1
Begins to work in an efficient, orderly manner. Works quickly without supervision. Asks pertinent questions.		Wastes little time getting started. Asks some questions to clarify procedures. Works with some supervision.		Wastes time in beginning work. Asks many unnecessary questions. Has to be told to start.

When constructing a rating scale, whether it is a graphic, numeric, or descriptive scale, one should include:

1. clear and concise directions.
2. spaces for identifying information.
3. dimensions which are educationally significant.
4. dimensions that are directly observable.
5. dimensions which are clearly defined.
6. rating positions from three to seven. The range of possible rating positions will vary depending on the depth of the rating desired.
7. vivid words to describe the two levels of high and low. Be sure that the average is truly "average."
8. a space for a total score.
9. a space for comments. This may be more useful with graphic and numeric scales, in that the rater may explain why the rating was given. With descriptive rating scales, the rater may underline phrases or words in the descriptors which clarify their observations.
10. a space for each dimension's score. This is usually a blank or a column to the right of the scale. This facilitates adding the dimension scores together for a total score related to the entire event, product, or behavior being rated.

Rating scales are most often used to evaluate procedures, products, or personal growth and development, such as social skills. Students, teachers, and judges using rating scales should be aware of several errors in rating which may occur during the use of the rating scale in evaluations:

1. Halo effect - allowing first impressions to shadow your rating of the product, procedure, or the person.

2. Personal bias - the tendency to judge all students, products, etc., high or low.

3. Logical error - allowing a preconceived notion to influence scoring.

2. Reporting Forms

   A. Project reports - devices or combinations of devices used to record progress or growth over a limited period of time concerning a specific goal. Tips for construction include:

1. providing space for identifying information.
2. providing specific directions which describe what to include, how many pages the report should be, what resources to use in developing the report, suggestions, or examples to follow.
3. providing space for recording evidences of progress upon completion of each step after planned activities.
4. other methods of evaluation, such as rating scales or scorecards for a comprehensive evaluation of the students' achievement of the competency.

An example of a project report is the following partial format for an extended learning experience:

EVALUATING AN EXTENDED LEARNING EXPERIENCE

A SUMMARY OF MY PROGRESS

Directions: For each activity planned to help you reach your goals, list what you have learned and how you made progress.

Activity 1. ____

____

____

Activity 2. ____

____

____

Activity 3. ____

____

____

B. Activity reports - devices used to evaluate a special assignment done at home, school, or in the community that includes recording activities and written expressions by the student. Activity reports are completed at a designated time, usually at the end of a project. Important considerations to remember when preparing activity reports are:

1. provide space for identifying information, especially the name of the project.
2. provide specific directions which describe what to include, how many pages to complete, resources to use, suggestions and examples.
3. provide space for recording evidences or progress upon completion of each step after planned activities.
4. use the activity report in conjunction with other evaluation instruments, such as checklists, for the most effective evaluation.
5. use a structure that is relevant to the purpose of the report.

An example of an activity report is the following partial report related to time management:

TIME MANAGEMENT STUDY

Directions: List in order the work that was done during meal preparation during the last foods lab. Completely fill all columns. In the comment section provided, write a brief analysis of your allocation of time to various tasks during the meal preparation. List three or four ways in which you could use your meal preparation time more effectively.

Work Done	Time Taken for Preparation	Time Taken for Cooking	Time Taken for Serving	Time Taken for Cleaning
1.				
2.				
3.				
4.				
5.				

Analysis of Time: ____

____

____

____

Ways I Could Manage My Time During Food Preparation More Effectively: _____

____

____

____

C. Anecdotal records - factual descriptions of meaningful incidents and events which the teacher has observed in the lives of his/her pupils. Daily incidents and reports such as those recorded in anecdotal records provide teachers with insight as to how students typically act or perform in a variety of situations. Anecdotal records are frequently used for parent meetings concerned with student discipline problems. They are also used for employee counseling in areas of discipline or personnel problems. These observations may be used to supplement other forms of evaluation or may be the sole basis for measuring learning outcomes.

While anecdotal record forms are relatively easy to construct, the uses of this form of non-testing evaluation are limited in certain situations. For the most effective use of anecdotal records, one needs to:

1. keep the objective description of the incident separate from the interpretation of the behavior.
2. outline in advance the behavior you are looking for.
3. record incidents soon after they are observed. In doing this, the events will be fresh in your mind and will reduce errors of memory.
4. collect both positive and negative incidents.
5. be aware and record any unusual incidents even though they may not be the type of behavior you are observing for.
6. save interpretation of behaviors for a time after several incidents have been recorded and you are able to analyze the total picture without bias.

Anecdotal records are time consuming and take practice to do effectively. Therefore, this form of evaluation is best reserved for evaluating behaviors which cannot be recorded and measured in some other manner. An example of an anecdotal record form is given below.

Class ____________ Student ____________

Date ____________ Place ____________

Observer ____________

Incident:

Interpretation:

D. Logs and Diaries - student recordings of progress and tasks done over a period of time. May include more reactions and feelings from the student. These types of evaluation are best used for self-evaluation; to assist the student in analyzing behaviors and feelings about actions and the outcomes of these actions. Logs and diaries may be kept for recording and analyzing behaviors related to such activities as food intake, exercise patterns, personal relationships, and interpretations of experiences on-the-job.

Guidelines for using logs and diaries include:

1. providing students a format for ease in recording and analyzing the information.
2. providing as much structure as is needed depending on the age and maturity of the student.
3. using simple directions.
4. giving examples to illustrate how you want the information recorded and analysis done.
5. making your objectives for the project clear at the outset.
6. stressing confidentiality of the student's identity and their recordings.

Teachers seldom choose to grade logs and diaries, as this type of evaluation is often directed at assisting students in analyzing their own behavior and determining ways in which to change or improve their actions. If you must grade logs and diaries, be objective. Do not pass judgement on the behaviors recorded. You may select to concentrate on the students' ability to follow directions, the completeness of the recordings, and, if requested, the depth and completeness of the analysis done by the student of their own behaviors. An example of a student activity log is:

Food Consumption Log

Student Name____

Class____________________ Date of Food Record________________

Objective: Analyze incidents which affect your eating habits.

Directions: For 24 hours record all the foods you eat, noting when you eat, what you eat, how much you eat, where you eat, and the situation surrounding the food's consumption. At the end of the 24 hour recording period, review your notes and suggest factors which may be shaping your eating habits, how these affect your current health status, and how you might better manage these factors. Below is a brief example of how you might record your information.

Time Food Was Eaten	Food Eaten	How Much Was Eaten	Where You Ate	What Was Happening As You Ate The Food
7 a.m.	Egg, fried	2 large	Dining Room	Watched morning news
Time Food Was Eaten	Food Eaten	How Much Was Eaten	Where You Ate	What Was Happening As You Ate The Food

Activity log, continued

The factors that seem to most affect my eating habits are:

___

___

___

These factors affect my eating habits by: ___

___

___

Things I can do to control these factors and change my eating habits are:

___

___

___

E. Inventories - instruments that contain questions related to specific items of questions which the student responds to directly. The information obtained is limited to written responses of students to pre-arranged questions. Items are usually closed-type, structured, with the student asked to check whether they agree with it. For classroom use, inventories are often used to measure students' attitudes and interest. This type of self-report allows a great deal of flexibility. If the student is unsure of what to do, the teacher can clarify the directions at the time the inventory is completed. Tips for constructing and using inventories include:

1. select a topic of interest to students to help insure their honest input.
2. review and validate the instrument prior to its use.
3. make the inventory only as long as it needs to be.

Inventories may take several forms. One of the most simple may be used for measuring attitudes toward a certain subject or task. An example of this format is:

FUNDAMENTALS OF COMMERCIAL BAKING

Steps Reviewed	I Like It A Lot	It's OK	I Don't Like It
Weighing Ingredients			
Safety Practices in Handling Equipment			
Principles of Baking			
Food Preparation Labs			
On-the-job Practice			

Teachers may also measure students' attitudes by using a Likert-type scale. Students are asked to respond to statements on a five- or seven-point scale. The most commonly used scale is the five-point scale and generally includes the following responses: strongly agree (SA), agree (A), undecided (U), disagree (D), and strongly disagree (SD). To construct an effective and valid Likert-type instrument, you will need to:

1. write a series of statements expressing positive and negative opinions toward some object or activity.
2. select the best statements, at least 10, with a balance of positive and negative opinions. Edit the statements as needed to insure clarity.
3. randomly order the statements, so there is no pattern of positive and negative statements. List the statements, putting the letters of the scale to the left of each statement. For young students, you may wish to write out each word, such as "agree" rather than using the letter, "A."
4. directions should be clear and explain how the students are to mark their answers.
5. if you want the students to really think about the statement and make a decision about their attitude toward it, you may want to drop the "undecided" category. This forces students to respond one way or another to the statement.

An example of a Likert-type scale just described is given below.

Directions: Read each of the following statements carefully. Indicate how much you agree or disagree with each statement by circling the appropriate letter.

Key: SA - strongly agree
A - agree
U - undecided
D - disagree
SD - strongly disagree

SA A U D SD 1. Nutrition class is interesting.

SA A U D SD 2. Cooking lab is dull and boring.

SA A U D SD 3. Reading about nutrition research is dull.

SA A U D SD 4. Class activities are useful.

SA A U D SD 5. The nutrition experiments are too simple.

This same type of format may be used by substituting numbers for the letters. This format is more effective in determining the students' opinions or attitudes as to the importance of given activities done during a class in nutrition, as in the example provided below.

Directions: Read each of the following statements carefully. Indicate your rating of the task by circling the appropriate number.

Key: 1 - of greatest importance
2 - of great importance
3 - important
4 - of little importance
5 - not important

1 2 3 4 5 1. Staying up-to-date on current topics in nutrition.

Likert-type scale, continued

1	2	3	4	5	2. Analyzing the relationship between animal research and human nutrition.
1	2	3	4	5	3. Demonstrating various ways to prepare foods for mealtimes.
1	2	3	4	5	4. Interviewing nutrition professionals.
1	2	3	4	5	5. Planning menus for different income levels.

F. Questionnaires - devices used when factual information is desired. The information obtained is limited to written responses of subjects to prearranged questions, which are closed-ended.

In general, a questionnaire includes any type of instrument that has specified items or questions to which individuals respond to directly. Questionnaires used to gather information from students are most often related to the students' opinions, interests, concerns, needs, or information about the students' lifestyle. When constructing a questionnaire, you should:

1. provide for identifying information.
2. provide clear, concise directions.
3. keep the items short and brief.
4. use an easily tabulated format.
5. include items that achieve stated objectives.
6. omit items that are openly offensive to students.
7. assure the confidentiality of information collected.
8. allow students to remain anonymous, if they so desire.
9. omit items which are leading or reflect the teacher's bias.
10. structure items at a reading level appropriate for the responding students.
11. order items so that easier or more simple items are given first, followed by more difficult or specific items. This helps students organize their thoughts related to the items asked.
12. include items that ask for information that cannot be obtained from other sources, such as school records.

13. try out the questionnaire on a similar group of students before administering the questionnaire to the actual group of students.
14. have a questionnaire that is neat and attractive with ample margins, appropriate spacing, and that is easily reproduced.
15. be of a reasonable length. Ask only the items you need to gather the necessary information. Long questionnaires will cause the students to lose interest and not complete the questionnaire or not answer the items honestly.

The formats used for response formats for questionnaires are similar to those identified for inventories. These formats have been discussed in the previous section on inventories and will not be repeated.

The following example of a partial questionnaire shows how this type of non-testing device could be used in one of the occupational home economics courses.

Essential Job Characteristics for Food Service Occupations

Directions: Read each of the following job characteristics carefully. Rate each characteristic on its importance for a person's success in a food service occupation.

The scale for rating is:

5 - of crucial importance
4 - of great importance
3 - important
2 - of little importance
1 - not important

Job Characteristic	5	4	3	2	1
Ability to persuade people to do undesirable tasks.					
Perform all necessary food preparation tasks.					
Possess excellent organizational skills.					

3. Audio-Visual Techniques

Audio-visual techniques allow for flexibility and creativity. In comparison to other non-testing methods of evaluation, audio-visual techniques may be more expensive. Some of the areas of foods and nutrition in consumer home economics and methods of instruction in occupational home economics which may be evaluated via audio-visual methods include:

food preparation
sanitation in food service
customer relations
order taking in food service
food storage
job application skills
time and motion studies in food preparation and service
food receiving, storage, and inventorying

Many of the audio-visual methods are particularly effective for evaluating handicapped or disadvantaged students' achievement of essential competencies. The use of visual images enables the student to evaluate the situation in a "real life" setting in many instances. The use of graphic representations is more "concrete" for these students and is often an excellent means of evaluating the students' abilities and knowledge level. Because these methods can be used to illustrate models of successful workers, especially if handicapped workers are used, the handicapped student can see what adaptations may be needed to find and retain employment. Also, these methods can use a minimum of language. Only necessary information can be emphasized, thus reducing the possibility of confusing mentally handicapped students. The various audio-visual techniques available for student evaluation are:

A. Tape recordings

Tape recordings are relatively inexpensive in that the cost of equipment is low. Portable cassette players are available to most teachers.

This technique is limited to the analysis of personal interactions, but can be particularly useful for areas such as customer relations and employer-employee relationships. Tape recordings also help students to identify their values and attitudes through their analysis of the recordings. Teachers may use tape recordings to evaluate students' reactions and interactions in class and small group discussions.

B. Films and Filmstrips

This method is more expensive than tape recordings in that the projectors are more costly and films and filmstrips may be limited in the subject matter areas being taught. Also, films and filmstrips may be expensive to purchase or rent.

Most schools have film projectors and/or filmstrip projectors available for teacher use. Because of the high cost of relevant, high-quality films and filmstrips, there may be a tendency for some teachers to use school-owned films and filmstrips that are very dated. If these audio-visual materials meet the stated objective, you may opt to continue to use them despite the showing of out-of-date cars, hair styles, and modes of dress. In these instances, the teacher must be aware of these factors and stress to the students the message of the film or filmstrip and not the more apparent and dated clothes or hair styles.

This audio-visual method can assist students in:

1. identifying values, attitudes, and goals.
2. identifying principles or procedures.
3. identifying generalizations and guidelines.
4. analyzing an interaction or step in a lengthy procedure. The use of "stop-action" is especially beneficial for this objective. The use of "stop-action" may also be used to stimulate class discussion or be used as a test question.

When using films or filmstrips as a means of evaluation, it is important to remember the following guidelines:

1. review the selected film or filmstrip with the method of evaluation in mind.
2. determine how students will record principles.
3. explain the process to the students.
4. follow-up the viewing of the film or filmstrip with a report from the students and a class discussion.

C. Photographs and Transparencies

This form of audio-visual technique has many possibilities in evaluation. For handicapped students, the use of photographs and transparencies are particularly effective in that the student is able to react to visual images rather than to written material.

Photographs and transparencies are particularly useful for:

1. indicating growth and progress. You can, via pictures, show steps in a process, emphasizing the final product's characteristics.
2. identifying principles that are important for the student to know. Transparencies are helpful in assisting slow learners in recognizing and applying what they have learned to new areas.
3. providing a continuous record for evaluation. By being able to illustrate and discuss each phase of a process, the teacher is better able to fully evaluate the students' understanding of principles and process.

Photographs and transparencies are inexpensive and the majority of schools have overhead projectors available for teacher use. Permanent markers may be used for transparencies containing stable material, such as the principles of preparing yeast breads. This saves time in preparing for class and the teacher can construct attractive and informative transparencies.

Because of their low cost, teachers may consider letting the students prepare photographs and transparencies as a class or group project. For an area such as sanitation in food service, the student could work with a restaurant owner, take pictures of good and poor examples of sanitation, and analyze each situation. Students could brainstorm and provide ideas for photographs and transparencies. This method of evaluation can be creative and stimulate learning.

D. Pictures

Clear, easily identifiable pictures are excellent for allowing students to apply knowledge to situations. Pictures of food service equipment could be used to determine the students' knowledge of the parts of the item or to identify various pieces of equipment.

Pictures may also be used to evaluate the students' awareness of various personal qualities. Students can identify the values and attitudes of others and relate them to their own values and attitudes. Pictures can help many students develop an aesthetic appreciation of things and situations.

If neat and clear, in terms of both the art work and the message conveyed, pictures can be an effective method of teaching and evaluation. Pictures of poor quality with no identifiable purpose only serve to confuse the student and diminish the subject matter at hand.

E. Cartoons

Like pictures, photographs, and transparencies, cartoons may be used to allow students to analyze personal relationships and the qualities of people.

Cartoons can often convey a message about a topic, opening the way for students to examine their lives and values. Because cartoons express attitudes, values, and beliefs so vividly, they are most relevant for evaluating objectives written in the affective domain.

F. Graphs

There are many different types of graphs, such as pie charts, bar graphs, flow charts, and progress charts. Each is a method used to illustrate progress, make comparisons, or represent relationships between people or events. These are inexpensive, easy to construct, and a visual form of determining a student's individual progress or their standing in relation to other students.

G. Computer-Assisted Evaluation

The audio-visual methods discussed to this point are what most teachers are accustomed to using. While some rely on the availability of equipment, such as an overhead projector, these types of evaluation are relatively inexpensive and widely available.

With the decrease in the cost of personal computers and the emphasis placed on teaching computer literacy in the schools, many schools now have at least one or two personal computers available for student use. Computer-assisted instruction (CAI), the programming of subject matter onto a floppy disk, has been available for several years. Accused of being little more than "electronic-page turners," few of these programs contain little, if any, form of evaluation.

Some CAI programs now include true-false or multiple-choice type questions during or after the instruction. These may not be well constructed items nor may they evaluate the subject matter at the level you, as a teacher, would. Because of this you may not wish to rely on CAI as a method of evaluation.

There are currently available computer programs which allow the teacher to program, or write, multiple-choice type tests for personal computer use. Also known as test authoring programs, these programs are fairly simple to use and most will keep a record, on disk, of the student's performance on the test. Some programs will even average grades and calculate class grade statistics.

Test authoring programs do not relieve the teacher of the responsibility for stating clear instructional objectives and writing quality test items.

Computer-assisted tests do have some problems, such as test security. This refers to problems such as students not being able to easily "break" the system and have access to test items and answers or student grades. Also, when a student is taking the test, you need to be sure that other students are not allowed to view the test items as they appear on the screen and that another student take a test for a classmate.

The newest and most innovative method of computer-assisted instruction and evaluation is interactive video instructional system (IVIS). IVIS utilizes computer control, which allows for branching in the instruction at segment, enabling students to access segments of the program being used. The computer is most often connected to a videocassette player/recorder or videodisk player and a television, separate from the computer's own monitor.

The earliest examples of IVIS used the videocassette player/recorder, which was slow due to back-and-forth motions required during the instructional and evaluation period. Students viewed a segment of information and then responded to a question or a series of questions related to the segment just viewed. Answers were keyed in by use of the computer keyboard. Based on the student's response, the computer program moved the tape back for a review of the instructional segment or forward onto the next segment.

Today, the technology of IVIS has advanced greatly to the use of videodisks and light pens. The student, with the aid of an instruction manual, runs the light pen over a UPC-like barcode to activate the videodisk. The instructional segment is viewed and the student responds to a question or a series of questions printed in the instruction manual. Again, the student passes the light pen across the bar code of the answer to the question. If correct, the student receives positive feedback on the screen in the form of a printed message and the program moves the videodisk to the next instructional segment. If incorrect, the student receives a screen message telling him that he answered the question incorrectly. The computer program then moves the videodisk to a branch in the program which shows the information in a different way or explains why the student's answer was incorrect. In both cases, videocassette player/recorder and videodisk, the instructional segments, questioning, and branching of the instructional segments are controlled by the computer program.

While the cost of videocassette player/recorders and some videodisk players has dropped in the last several years, these pieces of equipment may be too expensive for many school districts. Also, the cost of high-quality, relevant interactive programs may be prohibitive. Some areas of instruction presently do not have any programs available. Despite these factors, it is important that teachers be aware of IVIS, its benefits, and the changes that may occur in the future in this area of instruction and evaluation.

Interactive video instructional systems create a learning environment that is both stimulating and educational. Students are exposed to color, sound, and motion. The "real world" can be examined through live-taped scenarios. Students can proceed at their own pace and are involved in the instructional process. The capabilities of IVIS are limited only by the creative minds behind the program development.

This method of instruction and evaluation is applicable to most all areas of vocational home economics, but has significant value for occupational home economics. Customer relations, personnel interactions, methods of food preparation, ordering, storage, and sanitation are excellent topics for IVIS. Because of the involvement of the student and the use of "real world" illustrations, IVIS may be a very good method of evaluation for handicapped students. To be effective and fair to these students, the questions printed on the screen should be written at an acceptable reading level of answers keyed in such a way that poor reading ability does not place the student at a disadvantage.

As educators, it is vital for you to be aware of the availability of this technology and its progress and changes. You should also convey your interests and concerns for the content of materials which are being developed. It is through this type of education advocacy that instructional and evaluation techniques are improved.

4. Sociometric Techniques - devices used to reveal the extent to which individuals are acceptable to others in a group and to help the teacher understand and modify the social structure of the class.

Most often, sociometric techniques are used when the teacher wants to place students in groups for purposes such as foods labs or semester or year-long projects. The methods included are sociograms, social distance scales, and social sensitivity techniques.

Because of the complexity of these techniques, an indepth discussion of each of these methods will be omitted. Two excellent references for further information on sociometric techniques are:

Gronlund, N. E. (1981). Measurement and evaluation in teaching, 5th edition. The Macmillan Company; New York.

Ahmann, J. S. and Glock, M. D. (1963). Evaluating pupil growth. Allyn and Bacon, Inc., Boston.

The researchers hope that this section has illustrated the many methods of evaluation beyond traditional paper-and-pencil tests and the many purposes of evaluation beyond the need to provide a grade for a class. Through creativity and diligence, the most appropriate method of evaluation can be developed to meet the needs of the total student and the teacher.

Chapter IV

Results of the Study

The main focus of the study was to assist teachers in documenting students' achievement of essential elements in the subject area of food and nutrition for Vocational Home Economics Education in Texas. Separate and distinct pools of multiple-choice test items were developed to measure students' knowledge and comprehension of each of the essential competencies in food and nutrition, in all courses in Consumer and Homemaking Education, and in all courses related to methods of instruction in Occupational Home Economics Education. The pool of test items was developed by identifying test questions pertaining to food and nutrition, and Food Production, Management, and Services, adapting them for the Texas curriculum, and generating test items to supplement selected test items and/or supply test items for essential competencies for which no test item could be identified.

The test items were then reviewed by the members of the advisory committee, Judy Heatherly, Vocational Home Economics Education Director, and Gay Nell McGinnis, Occupational Education Specialist, Texas Education Agency. Revisions reflecting their suggestions were made. The final step in test development was to divide each separate test item pool into two test versions for the related course. However, because of fewer identified essential competencies, fewer multiple-choice test items and only one test version were developed for Exploratory Homemaking.

Responses from the 11 multiple-choice item tests were analyzed. Data analyses included the determination of item difficulty, item discrimination, and test reliability. Of the 1,112 test items analyzed, approximately 55% were discriminating. All test forms were analyzed as statistically reliable, with reliability coefficients ranging from a low of +.761 to a high of +.927.

This chapter discusses date analyses and the results of the study. Based upon the development and field testing of these test items, a procedure for future competency test development is recommended.

Description of Sample

The 11 multiple-choice item tests were mailed to 49 teachers in middle and senior high schools throughout Texas. Teachers identified for participation in this study were selected by the Occupational Education Specialists in the Texas Education Agency and the Director of Vocational Home Economics Education at the Texas Education Agency. Participating teachers represented schools in all geographic locations of the state and included students of varying socioeconomic levels, ethnic backgrounds, and levels of ability.

While 49 teachers agreed to participate in the study, delays encountered in some teachers receiving the tests allowed for 82% (39) of the participating teachers to return the tests in time to complete data analysis. Table 1 shows the distribution pattern used for field testing the multiple-choice tests. A total of 1,446 tests were mailed to participating teachers for field-testing. Eight hundred and thirty-one completed tests were returned. This represents a 57% rate of return. Of the 831 returned instruments, 820 were usable and were included in data analysis.

Table 2 indicates the number of respondents for each course in Vocational Home Economics Education and each method of instruction for Occupational Home Economics Education. This table also indicates the number of students completing test form A or test form B for each course.

Table 1

DISTRIBUTION PATTERN FOR FIELD-TESTING MULTIPLE-CHOICE TESTS

Areas of Instruction	School Size						Totals
	Small		Medium		Large		
	N	%	N	%	N	%	N
Exploratory	18	16	42	38	50	46	110
Homemaking I	38	15	60	23	166	62	264
Homemaking II	66	37	18	10	94	53	178
Homemaking III	40	34	48	41	30	25	118
Food and Nutrition Semester Course	82	27	100	33	120	40	302
HECE	16	25	48	75	-	-	64
PELE	-	-	50	45	60	55	110
CVAE	-	-	106	66	54	34	160
VEH	-	-	48	34	92	66	140

Table 2

NUMBER OF STUDENTS COMPLETING MULTIPLE-CHOICE
ITEM TESTS OF VOCATIONAL HOME ECONOMICS

	Exploratory	Homemaking			Food and Nutrition Semester Course	Occupational			
		I	II	III		HECE	CVAE	PELE	VEH
Form A	1 test version only	22	43	43	136	11	51	48	60
Form B		20	36	42	81	10	57	48	37
Total	75	42	79	85	217	21	108	96	97

Prior to the actual test, each student was asked to respond to six items related to the student's present grade level, age, sex, and ethnic background. Table 3 reports the demographic variables of the 820 students completing these items.

In addition to the above variables, students were asked to indicate the Vocational Home Economics Education courses they had previously taken, not including the course they were presently enrolled in. However, since several students misinterpreted this question, this data were not presented in Table 3. Also, information concerning Food Production, Management, and Services experiences in courses related to Occupational Home Economics was similarly confused. Therefore, this data were also omitted from Table 3.

As indicated in Table 3, the majority of students enrolled in all courses related to Vocational Home Economics and all methods of instruction for Occupational Home Economics were in the 11th grade, between 16 and 17 years of age, female, and were white, not of Hispanic origin. A per course analysis indicates that those students enrolled in Exploratory Homemaking were most

Table 3

CHARACTERISTICS OF SAMPLE

	Areas of Instruction in Vocational Home Economics					Occupational					
Variables	Exploratory	Comprehensive Homemaking I	Comprehensive Homemaking II	Comprehensive Homemaking III	Food and Nutrition Semester Course	HECE	PELE	CVAE	VEH	Totals	
	N=75	N=42	N=79	N=85	N=217	N=21	N=96	N=108	N=97	N=820	%
Present grade level											
7th-8th	54	1	1	-	-	-	1	31	20	108	13.2
9th	21	28	-	-	-	-	-	36	27	112	13.7
10th	-	5	50	4	46	-	24	19	23	171	20.9
11th	-	6	20	58	84	12	44	10	23	257	31.3
12th	-	2	8	23	87	9	27	12	4	172	21.0
Present age											
12-13	20	-	-	-	-	-	-	1	4	25	3.1
14-15	54	18	15	-	13	-	9	54	27	190	23.2
16-17	1	23	55	61	129	13	54	37	51	424	51.7
18+	-	1	8	24	74	8	33	16	15	179	21.8
Sex											
Male	7	16	6	15	90	5	51	11	27	228	27.8
Female	67	26	73	70	126	16	55	97	68	598	72.9
Ethnic Heritage											
American Indian or Native Alaskan	1	1	-	1	6	-	4	5	4	22	2.7
Asian or Pacific Islander	-	-	-	-	4	-	2	3	1	10	1.2
Black, not of Hispanic origin	4	6	37	26	15	8	37	38	47	218	26.6
Hispanic	27	28	-	10	21	1	18	43	12	160	19.5
White, not of Hispanic origin	43	7	42	48	169	12	34	18	32	405	49.4

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often 7th-8th graders (72%), were between 14 and 15 years of age (72%), female (89%), and were white, not of Hispanic origin (57%).

The student profile for students responding to the Homemaking I multiple choice items indicates that the majority of students in this course were enrolled in the 9th grade (67%) and were between 16 and 17 years of age (55%), with a number of students enrolled being between 14 and 15 years of age (43%). The majority of Homemaking I students were female (62%) and were of Hispanic origin (67%).

Most of the participating students from Homemaking II were enrolled in the 10th grade (63%), were between the ages of 16 and 17 (70%), were female (92%), and were white, not of Hispanic origin (53%). The remaining participating students enrolled in Homemaking II were Black, not of Hispanic origin (47%) with no ethnic representation from American Indian or Native Alaskan, Asian or Pacific Islander, or Hispanic students.

Homemaking III participants were most often enrolled in the 11th grade (68%) and were between 16 and 17 years of age (72%). As with other courses discussed, the majority of students were female (82%). Students of white, not of Hispanic origin were predominate in this course (57%).

Those students responding to the Food and Nutrition Semester Course test items were most frequently enrolled in either the 11th grade (39%) or the 12th grade (40%). Most students enrolled in this course were between 16 and 17 years of age (59%) and were female (58%). Again, the majority of students reported being white, not of Hispanic origin (78%).

In examining these general characteristics of responding students, the student profile changed somewhat for the various methods of instruction in Occupational Home Economics Education. Students enrolled in Vocational

Education for the Handicapped (VEH) courses had an even distribution of students enrolled in the 7th-8th grades (21%), 9th grade (28%), 10th grade (24%), and 11th grade (24%). Most of the participating students were between 16 and 17 years of age (53%) and were female (70%). The ethnic heritage of these VEH students was generally either Black, not of Hispanic origin (49%), or white, not of Hispanic origin (33%).

Participating Pre-employment Laboratory Experience (PELE) students were most frequently enrolled in the 11th grade (46%) followed by an almost equal distribution of students enrolled in the 10th (25%) and 12th (28%) grades. Most of the participating PELE students were between 16 and 17 years of age (56%). Unlike the Vocational Home Economics Education courses discussed, there was an almost even distribution of female (57%) and male (53%) students. The majority of students reported their ethnic heritage being either Black (39%) or white, not of Hispanic origin (35%).

The majority of participating Home Economics Cooperative Education (HECE) students reported being enrolled in the 11th grade (57%) and were between 16 and 17 years of age (62%). The majority of students reported being either Black, not of Hispanic origin (38%) or white, not of Hispanic origin (57%).

Finally, Coordinated Vocational-Academic Education (CVAE) students responding to test items developed for the Food Services, Production, and Management courses indicated that the majority of students were either enrolled in the 9th grade (33%) or in the 7th or 8th grade (29%). Students were most frequently either between 14 and 15 years of age (50%) or between 16 and 17 years of age (34%). Female students were predominant (90%) and most often students reported being of either Hispanic origin (40%) or Black, not of Hispanic origin (35%).

Analysis of Data

Test items were analyzed using TEST (Test Evaluation System), a comprehensive computer grading service at Texas Tech University. Results from statistical analyses for item difficulty, item discrimination, and reliability are identified in table format.

Item difficulty was measured using values based upon two factors: (1) level of difficulty, the percentage of students answering the item correctly and (2) rank, an ordering of questions corresponding to the number of students answering the item correctly. For example, a rank of one would indicate an easy question; a higher rank would indicate a more difficult question. It is recommended that the majority of items on a test be of average difficulty. A difficulty index between 40 and 60 percent is considered an acceptable range. As a test item's level of difficulty approaches 60, the easier the item is considered to be. Conversely, a test item difficulty index approaching 40 is considered a more difficult item. Only those items falling within this range of acceptability are identified in the column labeled "level of difficulty." All other listed test items are discriminating, but considered easier or more difficult than those within the average range.

Point-biserial r was used to measure item discrimination. The point-biserial correlation coefficient (r_{pbs}) can be considered a Pearson's Product Moment Correlation (r) between each item (1 if answered correctly, 0 if not) and the total score. The r_{pbs} approaching +1 indicates that the students who answered the items correctly tended to make the best grades; but as the r_{pbs} approaches -1, those who answered the item correctly tended to make the lowest grades. As the r_{pbs} becomes zero, the item has lost its ability to discriminate;

i.e., the student's score may not be predicted by observing whether or not the item was answered correctly. Only those items having probability values at the .05 level of significance and beyond were identified in the tables as discriminating items. Items with the highest discriminating power contribute most to the reliability of the measure. The discriminating power of each of the items is a good indicator of the item's contribution to the quality of the total instrument.

Kuder-Richardson Formula 20 was the method used to determine reliability of the measure based upon the homogenity of variance between items. The resulting reliability coefficient indicates a measure of internal consistency, providing information concerning the consistency of testing procedures and of results over different samples of items. In other words, Kuder-Richardson estimates of reliability test whether the items in the test are homogeneous - that is, whether each test item measures the same quality of characteristic as every other. Based upon a single administration of a single form of a test, Kuder-Richardson is a relatively easy procedure for answering the question, "Would students obtain the same score on this test if they were to be retested right away?" Kuder-Richardson Formula 20 is based on the proportion of persons passing each item and the standard deviation of scores. The computation is rather cumbersome, and therefore, will not be discussed here. The KR-20 reliability coefficient varies from 0 to +1, and indicates increasing reliability as the number approaches +1. Teacher-developed tests commonly have reliabilities somewhere between .60 and .85. The KR-20 coefficient may be interpreted as the lowest possible reliability for a given test. In most cases, the actual reliability if probably somewhat larger.

Erickson and Wentling (1976) report that reliability is a relative factor and that there are no rules stating that reliability must be of a certain level before an evaluation instrument can be useful. The degree of reliability depends largely upon the nature of the decision to be made.

Several factors influence the size of a test's reliability coefficient. For example, KR-20 reliability estimates are greatly inflated when speed is a significant factor in testing. Other factors include the length of the test and the range of test scores. In general, the longer the test, the higher the reliability. This is because a longer test will provide a more adequate sample of the behavior being measured and the scores are apt to be less distorted by chance factors such as guessing. In addition, the larger the spread of scores, the higher the estimate of reliability. Greater differences between the scores reduces the possibility of shifting positions. Sample size and homogenity of the sample can also affect the size of the reliability coefficient. The more homogeneous the sample, the smaller the spread of scores, and therefore, the lower the estimate of reliability. Estimates of reliability are therefore subject to change over a period of test administrations. Thus, no test may have a single, characteristic coefficient of reliability.

Since the major focus of this report was to document student achievement of the essential competencies, the results of statistical analyses of each test item were correlated with specific essential competencies. The first column identifies the essential competencies by number. Two forms of a multiple choice test were developed for each instructional area for the subject matter of food and nutrition, with the exception of Exploratory Homemaking which had only one form. Only those test items analyzed as discriminating at the .01 and .05 levels of significance (or beyond) are identified in the tables. Those test items with a level of difficulty between 40 and 60 percent are identified in the third column. Items having a level of difficulty above or below the average range of difficulty are simply identified by rank. The fourth column of the tables indicates the rank of the test items. The higher the rank, the more difficult the item. Thus, an item with a rank closer to one would be considered an easier item. The final column of the table contains the point-biserial r coefficient, an indicator of the item's level of discrimination. As the coefficient r approaches 1, the item becomes more discriminating.

An analysis of data from test forms of each instructional area will follow: Exploratory, Homemaking I, Homemaking II, Homemaking III, Food and Nutrition Semester Course, HECE, PELE, CVAE, and VEH.

Exploratory Homemaking

One form of the Exploratory test included 48 items representing 5 essential competencies. Of the 110 tests distributed, 75 were returned. Discriminating test items at the .05 level of significance or beyond are identified in Table 5. The following table represents an estimate of reliability for measures of the tests:

Table 4

RELIABILITY COEFFICIENT FOR EXPLORATORY TEST

Test Form	KR-20 Reliability Coefficient
(only one form)	.85

The measures of reliability were very acceptable based upon KR-20 analysis. Test items for all identified essential competencies in the subject area of food and nutrition were found to be discriminating at the .05 level or beyond.

Comprehensive Homemaking I

Two forms of the Homemaking I test included 214 items representing 25

Table 5

EXPLORATORY HOMEMAKING
TEST ITEMS HAVING ACCEPTABLE LEVELS OF DIFFICULTY AND/OR DISCRIMINATION

N = 75

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
67	Studies by nutritionists tell us that in the United States, the nutritional quality of teenagers' diets is A. poorer for boys than for girls. B. about the same for boys and girls. C. poorer for girls than for boys. D. better than for other age groups.		44	.367*
	Difficulty in seeing at night might be the result of a deficiency of A. vitamin A. B. vitamin B. C. vitamin C. D. vitamin D.	48	39	.480*
	Nutrients most likely to be deficient in American's diets are A. calcium, iron, and vitamin A. B. carbohydrates, vitamin C, and protein. C. iron, protein, and vitamin C. D. vitamin A, calcium, and fat.	56	32	.315*
	The group which needs the most calories in their diet is A. adult females. B. adult males. C. teenage boys. D. teenage girls.	60	28	.226
	Researchers suggest that diet can help control or prevent heart disease and recommend that our diets contain A. less animal fat. B. less fish and poultry. C. more dairy products. D. more red meat.		25	.313*
	Calories are provided by A. carbohydrates, vitamins, water. B. fat, minerals, water. C. protein, fat, carbohydrates. D. protein, vitamins, minerals.		15	.326*
	To help your body maintain regularity, increase fiber intake by eating more A. beef, pork, and poultry. B. cheese and eggs. C. milk and milk products. D. whole grain cereals, fruits and vegetables.		11	.316*
	The key to losing weight is A. eating less calories than you are using. B. eating only one meal a day. C. going on the latest diet. D. skipping breakfast.		7	.325*

* $p \le .01$ (other values reported at $p \le .05$)

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TABLE 5 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
68	The vegetable which provides the greatest amount of vitamin A per serving is A. beets. B. cauliflower. C. sweet corn. D. sweet potatoes.		48	.283
	The most nutritious quick breakfast is A. presweetened cereal and milk. B. ham and cheese sandwich and orange juice. C. scrambled egg, bacon and milk. D. toast, jelly, and milk.		47	.362*
	The best breakfast to help avoid the midmorning slump would be A. apple juice, pancakes and syrup, coffee. B. grapefruit juice, cheese toast, milk. C. orange drink, hot cereal with butter, coffee. D. tomato juice, cinnamon roll, hot tea.	55	34	.303*
	The foods which are the best sources of calcium are A. citrus fruits. B. dry beans and peas. C. enriched grain products. D. puddings and yogurt.		26	.446*
	Foods such as soft drinks, candy, and potato chips are often called empty calorie foods because they are A. high in calories and low in essential nutrients. B. low in calories and low in essential nutrients. C. poor sources of fat, sugar and starch. D. used up quickly by the body.		15	.381*
	A low calorie, nutritious snack would be A. celery and carrot sticks. B. cream cheese stuffed celery. C. chips and dip. D. peanut butter sandwich.		11	.360*
	The best source of vitamin C is A. applesauce. B. grapefruit. C. green grapes. D. peaches.		10	.356*
74	The bread and cereal group of the Daily Food Guide provides A. calcium, riboflavin, and protein. B. carbohydrates, thiamin, iron, and protein. C. fats, niacin, iron, and thiamin. D. vitamins A and C.		45	.230
	The best source of protein from a vegetable source is a serving of A. asparagus. B. green beans. C. dried beans. D. turnips.	44	41	.262

TABLE 5 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	For good nutrition, the number of servings from the bread and cereal group needed each day is A. one. B. two. C. three. D. four.	53	35	.391*
	The number of servings from the fruit and vegetable group needed each day is A. one. B. two. C. three. D. four.	60	28	.319*
	For adequate nutrition, the number of servings from the milk group a teenager should have each day is A. one. B. two. C. three. D. four.	60	28	.424*
	Red meats from the meat group provide an excellent source of A. calcium. B. iron. C. riboflavin. D. vitamin C.		26	.248
	The milk group of the Daily Food Guide provides A. calcium, riboflavin and protein. B. carbohydrates, thiamin, iron and niacin. C. protein, niacin, iron and thiamin. D. vitamins A and C.		21	.458*
	The nutrients that foods in the "fats, sweets, and alcohol" food group primarily contribute to your diet are A. carbohydrates and fats. B. proteins. C. vitamins A and C. D. vitamin B vitamins.		15	.441*
	The Daily Food Guide groups are divided according to A. colors. B. flavors. C. nutrients. D. textures.		14	.448*
75	The reconstituted fruit juice which would be your best choice for a low-calorie breakfast drink is A. apple juice. B. grape juice. C. grapefruit juice. D. pineapple juice.	51	38	.450*

TABLE 5 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	The best substitute for a serving of meat would be A. green beans and tomatoes. B. rice and corn. C. rice and dried beans. D. tomatoes and corn.		23	.348*
	Of the beverages listed below, the beverage which has the highest nutritional value and the least sugar is A. apple juice. B. chocolate milk. C. orange drink. D. root beer.		19	.336*
76	A meal of chicken enchiladas, guacamole, and refried beans has the least number of servings from the A. bread and cereal group. B. fruits and vegetables group. C. meat, fish, poultry group. D. milk and cheese group.	47	40	.365*
	For balanced meals and better nutrition, it is best to plan your meals around A. basic food groups, age of family members, and latest food fads. B. basic food groups, meal patterns, and variety. C. family eating habits, special dietary needs, and food budget. D. family food preferences, food budget, and seasonal fruits and vegetables.	56	32	.396*
	A meal of fried chicken, broccoli, tossed salad, and chocolate pudding needs to include a serving from the A. bread and cereal group. B. fruits and vegetables group. C. meat, fish, poultry group. D. milk and cheese group.		21	.360*
	When planning menus, the foods which can be substituted for milk according to the Daily Food Guide is A. butter or margarine. B. dried beans. C. ice cream. D. eggs.		18	.379*
	In planning a family menu, a good source of iron would be A. chocolate chip cookies. B. liver. C. strawberries. D. yogurt.		11	.364*
	The food group usually served as the main dish for the meal is A. fruit-vegetable. B. grain. C. meat. D. milk.		9	.429*

* $p \leq .01$ (other values reported at $p \leq .05$)

essential competencies. Of the 264 tests distributed, 45 were returned, with 42 usable for data analyses. Discriminating test items at the .05 level of significance or beyond are identified in Table 7. The following table indicates estimates of reliability for test instruments given:

Table 6

RELIABILITY COEFFICIENTS FOR HOMEMAKING I TESTS

Test Form	KR-20 Reliability Coefficient
A	.85
B	.92

The measures of reliability were very acceptable based upon KR-20 analysis.

Test items for 16 of the 25 identified essential competencies in the subject area of food and nutrition were found to be discriminating at the .05 level or beyond. The following essential competencies did not have discriminating test items:

86. Describe the six classifications of nutrients.
89. Plan meals using the Daily Food Guide.
91. Compare how food requirements differ from one person to another.
95. Identify efficient kitchen work techniques.
99. Evaluate factors affecting variety in menu planning.
102. Plan appropriate table settings.
104. Identify and interpret information on labels.
106. Utilize effective shopping techniques.
108. Utilize sanitary practices in the kitchen.

Many of the above essential competencies could be assessed through non-testing devices as described in Chapter III more easily than by multiple-choice items.

Table 7

COMPREHENSIVE HOMEMAKING I
TEST ITEMS HAVING ACCEPTABLE LEVELS OF DIFFICULTY AND/OR DISCRIMINATION
N = 42

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
87	B.[2] The major source of calories for most people should be A. carbohydrates. B. fats. C. proteins. D. vitamins.		79	.570*
90	B. A daily intake of four cups of milk is recommended for A. adults and teenagers. B. children and pregnant women. C. pregnant women and nursing mothers. D. teenagers and nursing mothers.		79	.547
94	A.[1] The best beverage(s) from a nutritional standpoint is(are) A. coffee. B. milk. C. soft drinks. D. tea.		10	.444
100	B. The menu most appropriate for winter is A. sliced ham, potato salad, fresh asparagus, fresh strawberries and bananas, milk. B. tomato soup, beef pot roast with carrots and potatoes, green salad, milk. C. chef's salad, hard rolls, limeade, frozen yogurt sundae. D. tuna salad, stuffed tomatoes, sliced pineapple, iced tea.		7	.469
107	A. First aid treatment for a burn is to A. cover the burn with a cloth. B. cover the burn with grease. C. immerse the burn in cold water. D. shake a medicated powder on the burn.		18	.528
	B. Safety practices for food preparation include A. cleaning supplies stored away from food. B. equipment placed out of the way. C. handles turned outward on stove. D. knives stored loose in drawer.		98	.591*
109	B. Small appliances, in general, are time and energy savers if they are A. purchased on sale. B. the current model available. C. kept clean. D. used properly.		13	.570*
	A. The safest way to use a microwave oven is to A. experiment by using different cooking utensils. B. frequently check food as it cooks. C. consult your owner's manual. D. write the manufacturer.		13	.798*

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported as $p \leq .05$)

TABLE 7 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	B. Knives should be A. allowed to stand in hot water. B. heated to aid in slicing. C. sharpened with another knife. D. sharpened regularly.		21	.550
	B. A microwave oven should be cleaned with a(n) A. ammonia solution and a clean sponge. B. mild detergent solution and clean cloth. C. temperature of 500°F, carbonizing spills. D. wire brush using a scraping motion.	60	28	.476
	A. A consideration for efficient usage of refrigerators is A. allowance for a clear space at the top and door-opening aids. B. being located away from eating areas. C. placement next to ranges or other sources of heat. D. installation on an unlevel surface.	55	31	.425
	A. Before dismantling food processor, it is best to turn the power switch to A. high. B. low. C. off. D. on.	46	49	.457
	B. When using the microwave oven, A. more energy is required than a conventional oven. B. cakes will brown more evenly. C. foods may be cooled in aluminum foil. D. food pouches must be slit before cooking.		70	.601*
110	B. Dry foods and staples should be stored in a A. cool, dry area. B. dark, moist area. C. light, warm area. D. warm, damp area.	60	28	.503
	A. Frozen foods should be A. considered safe to eat for up to 1 year. B. kept frozen solid and dry. C. refrozen if thawed. D. repackaged in large containers for storage.	50	41	.460
112	A. The cooking term which refers to the cutting of food into small, uniform size pieces is A. dice. B. fold. C. sautee. D. whip.		11	.704*
113	A. The most common abbreviation used for "teaspoon" is A. tp. B. tsp. C. ts. D. T.		13	.524

TABLE 7 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
114	B. When the cup is placed on a level surface with the liquid poured in to the desired marking and checked at eye level, you are using the correct method for measuring A. flour. B. milk. C. salt. D. spices.		13	.524
	A. For leveling of measured ingredients, the best choice is A. a straight-edged spatula. B. the cutting edge of a knife. C. the handle of a wooden spoon. D. your finger, held straight.		21	.802*
117	A. To prevent the growth of bacteria and molds on fresh, uncracked eggs, they should be kept A. stored at room temperature. B. frozen until needed. C. less than 3 days. D. refrigerated in a covered container.		18	.466
118	B. When buying frozen vegetables, you should make sure the package is A. attractive. B. firm. C. soft. D. wet.		13	.440
119	B. Breads, cereals, and pastas are best kept in an area which is A. cool and damp. B. cool and dry. C. warm and damp. D. warm and dry.		27	.519
	A. Tunnels or large holes in quick breads are probably caused by A. overmixing the batter. B. the batter being too stiff. C. too much sugar in the batter. D. using an oversized pan.	50	41	.568*
120	B. A sign of freshness when purchasing fin fish is A. a strong, "fishy" aroma. B. dull cast to gills. C. firm flesh. D. sunken eyes.	55	35	.481
	A. Casseroles are often used in meal planning because they A. can be prepared for one person. B. can be used as one dish meals. C. prepared on top of the stove and save energy. D. use expensive items sparingly.	46	49	.600*
	A. Fresh, unfrozen fish should be prepared within A. 1 to 2 days. B. 3 to 4 days. C. 5 to 6 days. D. 7 to 8 days.	46	49	.457

TABLE 7 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	B. A method suitable for preparing older, less tender poultry is A. broiling. B. stewing. C. frying. D. roasting.		70	.470
122	B. After the coffee is brewed, the used coffee grounds should be A. allowed to soak in the coffee. B. left in the urn until it is cleaned. C. removed and saved for a second use. D. removed and discarded.	60	28	.449
125	B. A major responsibility of most front-of-the-house food service employees is A. checking deliveries of food and supplies. B. dealing with customers. C. fruit preparation. D. keeping financial records.	45	46	.569*

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported as $p \leq .05$)

Comprehensive Homemaking II

Two forms of the Homemaking II test included 212 items representing 19 essential competencies. Of the 178 tests distributed, 81 were returned, with 79 usable for data analyses. Discriminating test items at the .05 level of significance or beyond are identified in Table 9. The following table presents estimates of reliability for testing instruments used:

Table 8

RELIABILITY COEFFICIENTS FOR HOMEMAKING II TESTS

Test Form	KR-20 Reliability Coefficient
A	.85
B	.93

The measures of reliability were very acceptable based upon KR-20 analysis.

Test items for 18 of the 19 essential competencies in the subject area of food and nutrition were discriminating at the .05 level or beyond. The following essential competency did not have discriminating test items:

75. Identify government agencies which regulate business or agriculture, or protect consumers.

Multiple-choice items which are discriminating at the .05 level or beyond could be developed for this essential competency.

Comprehensive Homemaking III

Two forms of the Homemaking III test included 210 items representing 14 essential competencies. Of the 118 tests distributed, 85 were returned. Discriminating test items at the .05 level of significance or beyond are identified in Table 11. The following table indicates estimates of reliability for testing instruments used:

Table 10

RELIABILITY COEFFICIENTS FOR HOMEMAKING III TESTS

Test Form	KR-20 Reliability Coefficient
A	.85
B	.92

Estimates of reliability were very acceptable based upon KR-20 analysis. Test items for all essential competencies in the subject area of food and nutrition were identified as discriminating at the .05 level or beyond.

Food and Nutrition Semester Course

Two forms of the Food and Nutrition Semester Course test included 212 items representing 22 essential competencies. Of the 302 tests distributed, 217 were returned. Discriminating items at the .05 level of significance or beyond are identified in Table 13. The following table represents estimates of reliability for testing instruments used:

Table 12

RELIABILITY COEFFICIENTS FOR FOOD AND NUTRITION
SEMESTER COURSE TESTS

Test Form	KR-20 Reliability Coefficient
A	.85
B	.90

Estimates of reliability were very acceptable based upon KR-20 analysis.

Test items for 21 of the 22 identified essential competencies were discriminating at the .05 level or beyond. The following essential competency did not have discriminating test items:

3. Identify local, state, and federal nutrition programs.

Table 9

COMPREHENSIVE HOMEMAKING II
TEST ITEMS HAVING ACCEPTABLE LEVELS OF DIFFICULTY, AND/OR DISCRIMINATION
N = 79

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
64	B.[2] Single food items of commercially prepared baby foods are preferable to mixed dinners or vegetables because A. babies do not like mixed foods. B. food allergies are more easily identified. C. mixed foods are more likely to cause stomach upsets. D. mixed foods are lower in nutritional value.		83	.498*
	B. To encourage good eating habits among children A. set a good example during meals and snack time. B. punish them for not eating what they should. C. offer a reward, such as dessert, for trying a new vegetable. D. compare their eating habits to those of other children.		24	.434*
65	B. The amount of milk provided by a well-planned day's menu for a teenager should be A. 2 6-oz. servings. B. 2 8-oz. servings. C. 4 6-oz. servings. D. 4 8-oz. servings.	44	62	.371
	A.[1] Teen diets usually supply sufficient amounts of A. calcium. B. carbohydrates. C. iron. D. vitamin C.	49	54	.369
	B. A wise choice of breakfast beverage for an active 16-year old would be A. coffee with cream. B. chocolate milk. C. orange drink. D. whole milk.		12	.383
	A. The number of servings from the milk group needed by teenagers is A. 1. B. 2. C. 3. D. 4.		11	.310
66	A. The leading cause of death among adults is A. diabetes. B. heart attack. C. kidney failure. D. ulcers.		15	.311

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported as $p \leq .05$)

TABLE 9- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
67	B. As you get older, your need for A. both calories and nutrients will decrease. B. both calories and nutrients will increase. C. calories will decrease, but your need for nutrients will increase. D. calories will decrease, but your need for nutrients will remain about the same.		96	.445*
	B. The factor most likely to be a reason for poor nutrition among the elderly is A. anorexia nervosa. B. increased metabolism. C. loneliness. D. overactive appetite.		81	.349
	A. As with all age groups, an important goal in working with senior citizens is to A. consider their food preferences when planning menus. B. serve spicy foods to stimulate their appetites. C. let them eat whatever they want. D. provide smaller amounts of essential nutrients and fewer calories.	60	33	.379
	B. To accommodate reduced calorie needs, the best food choice to select in place of a vegetable with a cream sauce would be A. buttered vegetables. B. stir-fried vegetables. C. deep-fried vegetables. D. steamed vegetables.		12	.484*
68	B. Compared to pre-pregnancy, the calcium needs of the adult female increase during pregnancy by about A. 20 percent. B. 30 percent. C. 40 percent. D. 50 percent.		76	.517*
	B. Leg cramps during pregnancy may be a sign of low levels of A. calcium. B. iron. C. Vitamin A. D. Vitamin D.	42	69	.329
	B. Providing good nutrition for a healthy pregnancy A. means increasing intake of vitamins, minerals, and protein. B. means consuming twice as many calories. C. is easier for teenage mothers than for older mothers. D. should begin in the first three months of pregnancy.	47	53	.378

TABLE 9 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. A woman on a weight reduction diet, who learns that she is two months pregnant, should A. continue the diet. B. discuss the diet with her obstetrician. C. omit fats, sweets, and alcohol from the diet. D. take diet pills to speed weight loss.		9	.401*
71	A. Foods selected for an outdoor picnic should be foods that A. is always simple and formal. B. offers smaller helpings of food than served at other meals. C. have a low risk of bacterial contamination. D. provides the opportunity to try elegant new dishes.	47	55	.488*
73	B. If you are not sure how to politely eat a new food, you should A. observe the host/hostess. B. observe the person next to you. C. quietly ask the person next to you for help. D. use your best judgement.		19	.355
	B. A rule of thumb for using flatware is to A. avoid any utensil you don't know how to use. B. begin at the outside of the place setting and work toward the plate. C. begin with the pieces nearest the plate and work away from the plate. D. use forks before using spoons.		14	.365
	B. It would be considered bad manners to A. chew food with your mouth closed. B. keep each food separate on your plate as you eat it. C. take small bites of food. D. use a toothpick at the dinner table.		8	.347
74	B. The quality of convenience foods may be higher than full preparation food items because convenience foods are processed A. at the peak of nutritive value. B. in large quantities. C. in the maximum amount of time. D. using chemical preservatives.		96	.457*
	B. A food co-op provides its members with A. access to more specialty foods. B. higher quality food for their families. C. more control over their purchases. D. more for their food dollars.	47	53	.547*
	A. A severe freeze in the citrus growing areas of Florida would cause the price of oranges to A. decrease since the oranges would have to be sold quickly. B. increase since fewer oranges would be available for sale. C. increase since oranges would have to be imported. D. remain about the same since more oranges from Texas and California would be sold instead.		28	.393*

TABLE 9 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	B. When preparing food, a convenience food **usually** A. costs less to prepare than homemade. B. saves time in the kitchen. C. takes as much time as other foods. D. takes more time in the kitchen.		9	.444*
76	B. The factor **most** emphasized in food advertising is A. appeal to personal desires. B. economical value. C. method of preparation. D. usefulness of the product.		81	.589*
	B. In food advertising, children are **most** influenced by the product's A. cost per pound. B. nutritive value. C. packaging. D. preparation requirements.		14	.459*
	A. The primary purpose of **most** food advertisements is to A. describe the nutritive value of the product. B. influence consumers to buy the product. C. provide information about how the product is made. D. provide information about the product.		15	.569*
78	B. The form of milk which is the **most** economical to use is A. non-fat dry milk. B. whole milk. C. raw milk. D. evaporated milk.		76	.363
	B. A good, high quality protein substitute for meat is A. dried beans. B. dried fruit. C. fresh vegetables. D. whole grains.		14	.404
	A. The **most** expensive foods in the family food budget is A. milk. B. meats. C. fruits. D. breads.		8	.428*
79	A. The menu which is the **best** example of a low-cost summer menu for a family is A. baked chicken, corn on-the cob, coleslaw, bread, and milk. B. pan-broiled sirloin steak, tossed salad, hot rolls, and iced tea. C. leg of lamb, sweet potatoes, tossed salad, bread, and milk. D. steamed shrimp, stir-fry vegetables, rice, and hot tea.		19	.531*

TABLE 9 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
86	B. Homogenized milk, in comparison to other types of fluid milk A. contains more fat. B. contains less fat. C. has not been pasteurized. D. will not separate.		106	.428*
	A. The most perishable cheese is A. Cheddar. B. Gouda. C. Parmesan. D. Ricotta.		78	.405*
	A. The most concentrated and least expensive form of milk is A. condensed. B. dried. C. homogenized. D. unpasteurized.	51	49	.382
	B. When preparing milk and cheese dishes, one should use A. high temperatures and a long cooking period. B. high temperatures and a short cooking period. C. low temperatures and a long cooking period. D. moderate temperatures and a short cooking period.	53	43	.450*
	B. The recommended procedures for preventing the formation of a skin on milk when it is cooked is to A. bring to a rolling boil. B. stir after heating. C. use a low temperature. D. chill before heating.	56	37	.424*
	B. Cheddar cheese normally keeps in good condition in the refrigerator for A. one week. B. indefinitely. C. must be used immediately. D. several weeks.	58	32	.444*
	B. Processed cheese is A. American-made Cheddar cheese. B. blue-vein mold ripened cheese. C. mixture of fresh and aged natural cheese, pasteurized. D. soft cheese made from goat's milk.	58	32	.405
	A. Cheese that is melted at a high temperature becomes A. lumpy in texture. B. sharper in flavor. C. smooth and creamy. D. tough and stringy.	58	37	.455*

TABLE 9 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. The correct procedure for caring for milk is A. placing in a covered container in the upper part of the refrigerator. B. keeping it in an uncovered pitcher in the refrigerator. C. mixing fresh milk with older milk, blending thoroughly. D. keeping opened can of evaporated milk just as you would fresh milk.		17	.540*
	A. Cheese should be stored A. unrefrigerated, in a dry place until opened. B. frozen unless it will be used immediately. C. in the refrigerator, unwrapped to let cheese age. D. wrapped in the refrigerator to keep the surface from drying.		11	.559*
87	B. An ingredient unsuitable for use in soups that are to be frozen is A. tomatoes. B. peas. C. potatoes. D. celery.	42	69	.396
	A. Soups should be A. heavily seasoned. B. lightly seasoned. C. moderately seasoned. D. very heavily seasoned.	56	40	.320
	B. Bouillon is a A. delicately flavored soup usually made from beefstock. B. fish soup made with many kinds of seafood. C. highly flavored, clear soup. D. tomato base, cream soup.	56	37	.381
88	B. A sour flavor in yeast breads may be caused by A. insufficient salt. B. overbaking. C. over-risen dough. D. too much kneading.		87	.362
	B. The best method for keeping homemade yeast breads fresh is storage in A. a bread box. B. a sealed plastic container. C. the freezer. D. the refrigerator.		87	.334
	B. During the baking of yeast breads, the volume of the product increases the most during the A. first 5 minutes of baking. B. first 10 minutes of baking. C. last 5 minutes of baking. D. last 10 minutes of baking.	42	69	.482*

TABLE 9 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	B. Dry active yeast should be stored in a A. cool, damp place. B. cool, dry place. C. warm, damp place. D. warm, dry place.	42	69	.414
	A. A desirable characteristic of homemade white yeast bread is its A. dark brown color. B. tender crust. C. heavy texture. D. strong, yeast flavor.	51	49	.345
	A. The preparation method which takes the least amount of mixing time and produces the highest quality yeast bread product is the A. batter method. B. muffin method. C. sponge method. D. straight-dough method.	53	44	.355
	B. The type of flour which is most commonly used to prepare homemade yeast bread products is A. all-purpose flour. B. cake flour. C. pastry flour. D. self-rising flour.	53	43	.398
	B. "Punch down the dough" refers to A. refrigerating the dough. B. folding the dough to form shapes before baking. C. the technique of kneading the dough. D. expelling the air in the dough.	58	32	.458*
	B. Fat in yeast bread A. causes the bread to rise. B. helps to promote browning and a fine texture. C. makes the bread chewy. D. slows down the rising.		28	.553*
	A. The conventional oven is best suited for A. baking yeast bread. B. reheating yeast breads. C. thawing frozen yeast bread. D. toasting yeast breads.		21	.686*
89	A. Fruits and vegetables are more likely to be evenly distributed in gelatin salads if they are added A. after the gelatin has gelled. B. as soon as the gelatin has cooled to room temperature. C. as the gelatin is being prepared. D. when the gelatin becomes the consistency of egg whites.		102	.317

TABLE 9 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	B. The fruit which would add the most vitamin C to a fruit salad is A. apples. B. banana. C. orange. D. pineapple.		104	.352
	B. A spinach salad would be high in A. B vitamins. B. vitamin A. C. vitamin C. D. vitamin D.		87	.412
	B. The protein content of a salad may be increased by adding A. croutons. B. garnishes. C. legumes. D. mayonnaise.		87	.408
	B. The time of year at which green onions are least expensive is A. fall. B. spring. C. summer. D. winter.		85	.383
	B. Salad greens are least bruised by A. cutting. B. grating. C. shredding. D. tearing.	47	53	.469*
	A. A fruit salad made with grapefruit, oranges, apples, and pineapples would be high in A. B vitamins. B. vitamin A. C. vitamin C. D. vitamin D.		33	.456*
	B. The time of year at which fresh broccoli is most readily available is A. fall. B. spring. C. summer. D. winter.		22	.391
	A. The time of year at which watermelons are most readily available is A. fall. B. spring. C. summer. D. winter.		11	.473*
90	B. To destroy the bacteria trichinella spiralis, pork should be cooked to an internal temperature of A. 130°F. B. 140°F. C. 160°F. D. 170°F.		103	.336

TABLE 9 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
A.	The generally preferred cooking method for tender cuts of beef is A. barbecuing. B. broiling. C. steaming. D. stewing.		82	.502*
B.	The cut of meat most suitable for braising is A. brisket. B. chateaubriand. C. prime rib. D. sirloin steak.		76	.356
A.	The most important factor to consider when choosing the method of meat cookery is the A. aging process. B. amount of fat. C. size of the cut. D. tenderness.	40	69	.338
B.	Special health precautions to follow when serving poultry include A. placing stuffing in poultry immediately before roasting. B. storing stuffed turkey in a cold place until ready to cook. C. storing the leftover stuffed turkey in the coldest part of the refrigerator. D. stuffing the turkey and freezing it for future use.	42	69	.453*
B.	Older poultry will be more tender if it is A. baked. B. barbecued. C. broiled. D. stewed.	47	53	.378
A.	"Marbling" in meat refers to A. a white strip of thick fat. B. its red color. C. small deposits of fat. D. strips of meat close to the bone.	47	55	.382
A.	Variety meats include A. brisket. B. chuck. C. round. D. tongue.	58	37	.344
A.	In preparing fish, you should remember that most fish A. requires long cooking times. B. is best prepared by roasting. C. needs to be tenderized during cooking. D. should be cooked at moderate temperatures.		26	.383
A.	White fish is completely cooked when it A. breaks when lifted from pan. B. flakes easily. C. is dried out. D. is transparent.		25	.334

TABLE 9 - (cont'd)

Essential Competency		Test Item	Level of Difficulty	Rank	Point-Biserial r
91	B.	Pans for cakes that do not have fat as a basic ingredient should be A. coated with flour. B. greased. C. greased and floured. D. free from grease.		100	.475*
	A.	A sponge cake may have a coarse texture due to A. low cooking temperature. B. insufficient fat. C. insufficient sugar. D. under beating of batter.		82	.350
	A.	A quality of a good butter cake is a A. coarse texture. B. low volume. C. heavy, buttery flavor. D. velvet crumb.	42	64	.484*
	B.	The best mixing method that produces a light texture cake is A. conventional method. B. muffin method. C. one bowl method. D. quick method.	42	69	.361
	B.	To substitute all-purpose flour for cake flour in a recipe, use A. 2 tablespoons less all-purpose flour. B. the same amount of all-purpose flour. C. 1 tablespoon more all-purpose flour. D. 2 tablespoons more all-purpose flour.	42	69	.329
	B.	A cracked top on a cake may be caused by A. excessive cooking temperature. B. low cooking temperature. C. too much liquid. D. under beating the batter.	44	62	.597*
	B.	When frosting a layer cake, you should first frost the A. sides of all layers. B. sides of the bottom layer. C. top of the top layer. D. top of the bottom layer.	50	47	.489*
	A.	If you prepare baked products infrequently, you should purchase baking powder in the A. largest amount available. B. smallest amount available. C. the cheapest brand. D. the most expensive brand.	56	40	.341
	B.	Cakes that have shortening added will be A. chewy. B. dry. C. tender. D. tough.	58	32	.380

TABLE 9 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
96	B. The food service career which requires a college degree is A. caterer. B. chef. C. dietitian. D. school food service manager.	44	62	.604*
	A. Planning normal and therapeutic diets for patients as prescribed by doctors is done by a A. clinical dietitian. B. food service manager. C. head chef. D. research dietitian.	53	44	.554*
	B. The food service career which is likely to provide the most opportunities for creativity is A. cafeteria manager. B. chef. C. restaurant host/hostess. D. waiter/waitress.		28	.579*

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported as $p \leq .05$)

Table 11

COMPREHENSIVE HOMEMAKING III
TEST ITEMS HAVING ACCEPTABLE LEVELS OF DIFFICULTY AND/OR DISCRIMINATION
N = 85

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
81	B.[2] The deficiency disease caused by a lack of vitamin A is A. anemia. B. night blindness. C. rickets. D. scurvy.		62	.353
	B. A deficiency disease in which the bones are not properly formed and is often caused by a shortage of vitamin D, is called A. anemia. B. goiter. C. rickets. D. scurvy.	48	43	.455*
	B. Excess sodium consumption may result in A. artherosclerosis. B. hypertension. C. hypotension. D. nerve degeneration.	57	29	.408*
	A.[1] Cholesterol build-up may result in A. arteries becoming more flexible. B. the brain receiving less oxygen. C. the heart working harder. D. varicose veins.	58	29	.405*
	B. The most common nutritional anemia is the result of a deficiency of A. iodine. B. iron. C. manganese. D. vitamin K.		8	.357
82	B. Foods that are included in a lacto-vegetarian's diet, which are not part of a vegetarian's diet are A. fruits and vegetables. B. meat and poultry. C. milk and milk products. D. whole grain breads.		80	.572*
	B. Of all vegetarian diets, the one which makes planning nutritionally balanced meals most difficult is A. lacto-ovo-vegetarian. B. lacto-vegetarian. C. ovo-vegetarian. D. vegan.		80	.456*
	B. Organic foods are grown using A. chemical and natural fertilizers. B. chemical fertilizers. C. manure and compost. D. no fertilizers.		80	.374

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported at $p \leq .05$)

TABLE 11—(cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
B.	When the presence of a vitamin or mineral interferes with normal body functions, this is known as nutrient A. deficiency. B. interaction. C. performance. D. toxicity.		80	.345
A.	To obtain adequate protein, vegans (strict vegetarians) should include in their diets A. green, leafy vegetables. B. meat and poultry. C. milk and milk products. D. whole grain cereals.		85	.579*
A.	A suggestion included in the "U.S. Dietary Guidelines for Americans" is to A. avoid too much sodium. B. eat only natural sugars. C. eliminate cholesterol from the diet. D. maintain weight at no more than 10% above ideal weight.		85	.446*
B.	When compared to nonorganically grown foods, organically grown foods are generally A. less nutritious. B. more available. C. more expensive. D. more flavorful.		67	.421*
A.	Animals may develop resistant bacteria as a result of the long-term feeding of A. vitamin supplements. B. DDT. C. nitrosamines. D. antibiotics.	40	67	.383
B.	Untreated, anorexia nervosa may result in A. cardiac arrest. B. coronary heart disease. C. an emotional breakdown. D. ulcers.	43	49	.528*
B.	The vitamin and mineral supplement which is likely to cost the least is A. athlete's vitamin/mineral formula. B. generic vitamin/mineral formula. C. natural vitamin/mineral formula. D. stress vitamin/mineral formula.	43	49	.323
A.	The consumption of very high levels of vitamins and mineral supplements is referred to as A. drug therapy. B. good nutrition. C. megadosing. D. supplementation.	44	53	.363

TABLE 11 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. The mental and physical abnormalities that result from alcohol consumption during pregnancy are commonly referred to as A. alcohol malformations. B. ethanol syndrome. C. fetal alcoholism. D. fetal alcohol syndrome.	51	38	.477*
	B. The number of alcoholic drinks consumed per day which may result in injury to the child during pregnancy is as few as A. one. B. three. C. five. D. seven.		25	.416*
	B. A factor that may help reduce your chances of developing coronary heart disease is A. exercising regularly. B. increasing intake of red meats. C. increasing intake of refined carbohydrates. D. taking dietary supplements.		17	.443*
	B. A condition where a person selects to have a greatly restricted food intake and is generally underweight is referred to as A. anorexia nervosa. B. bulimia. C. emaciation. D. marasmus.		13	.558*
83	A. A sodium-restricted diet may include A. canned soups. B. breads and cereals. C. pickled foods. D. sausage.	44	53	.333
	B. A bland diet would include A. cooked cereals. B. hot, spicy foods. C. nuts and seeds. D. rich soups and sauces.	50	39	.502*
	B. The nutrient(s) usually supplied in generous amounts by teenagers' diets is(are) A. carbohydrates. B. fat. C. minerals. D. protein.	52	36	.606*
	B. For a teen on a weight loss diet, the best fast-food meal would be A. fried chicken breast, coleslaw, and low-calorie soft drink. B. "light-brand" taco and small milkshake. C. small hamburger on whole wheat bun and iced tea. D. tossed salad with ham and cheese bits, bread sticks, and low-fat milk.		8	.624*

TABLE 11 -(cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
84	A. A meat extender which could most effectively help improve the world's diet is A. algae solutions. B. high-protein corn. C. non-fat dry milk. D. soy protein.	56	32	.310
85	A. When planning special occasion meals, avoid as much as possible foods requiring A. advance preparation. B. an hour or more to cook. C. last-minute preparations. D. less than an hour to cook.	49	44	.343
	B. An appropriate meat course for a stand-up meal served buffet style is A. broiled sirloin steak. B. fried chicken legs. C. New England clam chowder. D. spaghetti and meat sauce.	52	36	.623*
	B. Formal service is A. an inexpensive form of meal service. B. used mostly at banquets and in restaurants. C. frequently used today. D. food served by the host/hostess at the table.	55	34	.553*
	B. If you are unsure of the correct way to conduct yourself at any occasion, you should A. ask another person. B. excuse yourself and leave. C. follow your best instincts. D. follow your host/hostess' lead.		21	.495*
	B. A response to a written invitation is expected if the invitation A. has "R.S.V.P." on it. B. is to a dinner you cannot attend. C. is to an informal dinner. D. requests a gift be brought.		17	.432*
	B. For a formal party, you should A. invite guests to help prepare and serve food. B. make detailed advance plans for menu and table setting. C. quickly plan refreshments after guests arrive. D. select new or elaborate recipes to serve guests.		7	.467*
86	B. An informal style of service frequently used to serve guests in an American home is A. buffet. B. banquet. C. counter. D. tray.		21	.325

TABLE 11 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	B. On a breakfast menu, juice, rolls, and coffee are often referred to as a(n) A. a la carte breakfast. B. American breakfast. C. club breakfast. D. continental breakfast.	43	49	.608*
93	A. The feature most likely to be optional on a range is a(n) A. oven cleaning service. B. oven heat regulator. C. surface units. D. surface units heat regulator.		21	.576*
	A. Certification seals are the consumer's assurance that the product A. complies with safety standards for construction and performance. B. was built in the United States. C. was constructed in a union plant. D. will work properly for at least 10 years.		14	.579*
	B. In selecting major kitchen equipment, you should buy the A. best model you can afford. B. least expensive model available. C. model which best meets your needs. D. most basic model available.		11	.368
	A. Essential kitchen equipment includes A. dishwasher, range, refrigerator. B. microwave oven, range, refrigerator. C. range, refrigerator, sink. D. sink, garbage disposal, range.		13	.452*
	B. When studying an appliance's warranty, you should check A. the cost of renting a replacement during repairs. B. the length of time the warranty covers. C. the parts needed for repair. D. where to ship the appliance for repairs.		13	.351
	A. You can get a good buy on large kitchen equipment by A. comparison shopping. B. figuring the annual depreciation. C. identifying the model with the most features. D. studying sales flyers.		9	.346
94	B. Energy efficiency ratings are A. a sales tactic and are of little real value. B. based on each state's energy guidelines. C. estimates of the appliance's energy efficiency. D. set by annual customer satisfaction surveys.		59	.412*

TABLE 11 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	B. The oven likely to require the least energy in food preparation is the A. conventional oven. B. convection oven. C. microwave oven. D. toaster oven.	48	43	.396*
	B. Regular and correct use of a dishwasher may result in A. more illness in the family. B. less detergent usage than handwashing. C. lower energy use than handwashing. D. more sanitary dishes than handwashing.	50	39	.489*
	A. To save energy when using a dishwasher A. use the heated drying cycle. B. run the dishwasher only when full. C. use the rinse and hold cycle. D. use 180° water for dishwashing.		17	.535*
96	B. An advantage of a parallel-wall kitchen is that A. all pieces of equipment can be lined up along one wall. B. all work areas are continuous. C. the dining area can be located at one side of the room. D. there are no corners to complicate storage.	40	55	.355
	A. For efficient use of kitchen storage space, frequently used items should be located A. in a central storage unit. B. in deep cabinets. C. near the point of use. D. on high shelves away from children.	56	32	.472*
	B. In kitchen planning, the sink should be A. accessible to both the refrigerator and range. B. isolated from both the refrigerator and range. C. located near the range. D. located near the refrigerator.	60	28	.517*
	B. In the kitchen, work surface(s) are needed A. on one side of the sink. B. on both sides of the sink. C. to the left of the sink. D. to the right of the sink.		11	.453*
100	B. The best small appliance choice for preparing and serving chocolate sauce would be a(n) electric A. fondue pot. B. saucepan. C. slow cooker. D. wok.		67	.494*

TABLE 11 -(cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	B. The use of metal trimmed dishes or metal twists in a microwave oven will cause A. arcing. B. bursting. C. overcooking. D. undercooking.		59	.609*
	A. In microwave cooking, stirring is necessary to A. cause foods to brown more evenly. B. mix foods together. C. move warmer food from center toward the outside. D. redistribute the heat within some foods.	40	67	.357
	B. A question you should ask before purchasing a specialized piece of food preparation equipment is A. "Can I return it if I don't like it?" B. "Do I own another appliance that will do the job equally well?" C. "Is there a rebate available?" D. "Will it blend with my kitchen decor?"	50	39	.535*
	B. The best choice for drying fruits would be a A. convection oven. B. dehydrator. C. microwave oven. D. smoker.	57	29	.428*
	B. The cooking time which a food will require in a microwave oven is determined by the A. amount of food being cooked. B. cooked temperature of the food. C. conventional cooking time of food. D. degree of browning desired.		25	.396*
	A. The material which reflects microwaves is A. glass. B. metal. C. paper. D. plastics.		25	.367
	A. To chop vegetables, the appropriate specialized kitchen equipment to choose would be a(n) A. blender. B. electric knife. C. food mixer. D. food processor.		14	.443*
101	B. The flavor, color, texture, and nutritional value of our foods are improved or protected by A. food additives. B. food processing. C. food substitutes. D. organic production.		62	.520*
	B. Monitoring food additives is primarily the responsibility of the A. food producer. B. Food and Drug Administration. C. U.S. Department of Agriculture. D. U.S. Public Health Service.	57	29	.508*

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
102	B. Food processing A. makes foods less acceptable to consumers. B. produces foods that are inferior in quality to unprocessed foods. C. results in less nutritious foods than unprocessed foods. D. results in little or no nutrient loss.		86	.479*
	B. The addition of nutrients to a product to supplement those already in the food is known as A. enhancement. B. fortification. C. preservation. D. processing.		76	.342
	B. The process of adding a nutrient, such as vitamin D, to milk is called A. condensation. B. evaporation. C. fortification. D. homogenization.		70	.532*
	A. Egg substitutes are A. appropriate for people with special health problems. B. more available than fresh eggs. C. less expensive than fresh eggs. D. more nutritious than fresh eggs.	56	32	.370
	A. Many foods are available in the United States because of A. improved transportation systems. B. reduced trade with other countries. C. technology that reduces product shelf life. D. the undecided nature of the consumer.	58	29	.303
	A. Food packaging materials A. help maintain quality and safety of food. B. speed changes in crispness, color, and flavor of the food. C. carry information inserts about the manufacturer. D. reduce the cost of producing and shipping the food.		21	.336
	B. When water has been removed during processing, the product is said to be A. deactivated. B. dehydrated. C. evaporated. D. hydrogenated.		17	.509*
108	A. A good example of how food specifications used in purchasing food for a food service establishment should be written is A. Bartlett pears, peeled, U.S. grade B, No. 10 cans, 30/35 count, 18-22 Brix., 62-63 oz. drained weight. B. canned peaches in heavy syrup. C. grade AAA large eggs, packed 18 to a tray. D. New York dressed fryers delivered at 30-40°F.	44	53	.500*

TABLE 11 -(cont'd)

Essential Competency		Test Item	Level of Difficulty	Rank	Point-Biserial r
	A.	A management responsibility in a food service establishment usually includes or is A. helping employees with personal problems. B. monitoring food quality. C. nutrient analysis of menu items. D. preparing food.	44	53	.487*
	B.	In the food service establishment "sanitizing" refers to a process with A. bacteria. B. dirt. C. food particles. D. mineral deposits.		21	.533*
	B.	A food service employee can help develop good public relations with customers by A. acknowledging customers in a friendly manner. B. being impersonal with customers. C. showing preference to certain customers. D. taking customer orders as soon as they are seated.		21	.458*
	A.	A desirable quality in food service personnel is A. less than average drive. B. short-tempered and curt. C. shyness and being reserved. D. the ability to organize work.		21	.576*
109	B.	The most effective form of merchandising for a food service business is A. sale promotions. B. showmanship. C. publicity. D. word-of-mouth.		96	.518*
	A.	The two basic financial statements used by food service establishments are A. balance sheet, and profit and loss statement. B. budget and balance sheet. C. budget and break-even analysis. D. budget, and profit and loss statement.		96	.342
	A.	The formula for preparing a balance sheet for a food service business is A. assets + liabilities = owner's equity. B. assets - liabilities = owner's equity. C. liabilities + owner's equity = assets. D. liabilities - owner's equity = assets.		95	.388*
	B.	A city regulation most affecting the location of a food service establishment is the A. city's sanitation regulations. B. city's tax structure. C. city's zoning ordinances. D. cost of building permits.		80	.519*

TABLE 11- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. The "gross receipts" of a food service establishment refers to the A. amount of money taken in during the day. B. amount of profit for the day. C. day's income less the cost of food. D. day's income less the cost of food and labor.		85	.385
	A. The capital required for a food service business refers to the A. assets of the business. B. liabilities of the business. C. location of equipment. D. money for operation.		85	.333
	B. The operating budget provides an effective device for A. evaluation. B. planning. C. marketing. D. training.		76	.339
	A. Fringe benefits of food service employees are paid for by the A. employee. B. employer. C. state. D. union.	42	60	.411*
	B. The state insurance program that protects persons injured or killed while on the job is referred to as A. federal life and health insurance. B. social security insurance. C. unemployment compensation. D. workman's compensation.	43	49	.558*
	A. An important first step in starting a food service business is to A. arrange for food suppliers. B. determine if the community can support the business. C. obtain adequate financing. D. plan the menu.	44	53	.304
	B. An effective food service manager must be A. able to share his problems with others. B. able to motivate people within the organization. C. subjective in personnel evaluations. D. unconcerned about long-term plans.	45	47	.426*
	B. An example of a fringe benefit is A. equipment necessary to do the job. B. health insurance. C. on-the-job training. D. protective clothing.	50	39	.528*

TABLE 11 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. The legal requirements for opening a food service facility usually include A. accessible parking for the handicapped. B. an electronic bookkeeping system. C. designated smoking and non-smoking sections. D. valid state and federal income tax numbers.	53	37	.609*
	B. The regulation governing the minimum wage, working hours, equal pay, overtime pay, and child labor is known as the A. Equal Compensation Act. B. Fair Labor Standards Act. C. Prevailing Wage Act. D. Right-to-Work Act.	55	34	.384
	B. In any catering service, the number of staff and their duties will depend on the A. length of the event. B. location of the facility. C. type of service offered. D. union's regulations.		25	.477*

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported at $p \leq .05$)

Table 13

FOOD AND NUTRITION SEMESTER COURSE
TEST ITEMS HAVING ACCEPTABLE LEVELS OF DIFFICULTY AND/OR DISCRIMINATION

N = 217

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
1	A.[1] The most likely contributor to poor health is eating A. fast-food items. B. high-calorie snacks. C. meals at irregular times. D. a limited variety of foods.		80	.205
	A. The three most common influences on children's eating habits are A. friends, food availability, and family values. B. food availability, food budget, and the regularity of meals. C. parents, friends, and television advertising. D. values, food budget, and television advertising.	53	46	.167
	B.[2] The influence that is most likely to cause a teenager to try a fad diet, eat fast foods, or skip meals is A. advertising. B. family. C. peers. D. tradition.		24	.338*
2	B. The muscular movements that move food along your digestive tract are called A. absorption. B. digestion. C. enzymes. D. peristalsis.	40	75	.367*
	B. The process by which food is changed into substances that cells can use is generally referred to as A. absorption. B. digestion. C. metabolism. D. secretion.	51	57	.393*
	B. A program designed to assist pregnant women and young children with nutritional problems is known as the A. Aid to Youth and Dependent Children. B. Federal Food Stamp Program. C. Social Security Insurance. D. Women, Infants, and Children Program.	51	57	.235
	B. Protein cannot be utilized by body cells until it is broken down into A. amino acids. B. fatty acids. C. simple sugars. D. trace minerals.		21	.278

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported at $p \leq .05$)

TABLE 13 - (cont'd)

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
4	B. In addition to providing energy fat helps A. build, maintain, and repair body tissues. B. move vitamins A and C in the bloodstream. C. transport vitamins A and D in the bloodstream. D. utilize protein and carbohydrate.		104	.227
	B. RDA's vary according to A. age and sex. B. age and weight. C. sex and weight. D. weight and height.		91	.229
	B. The best example of a polyunsaturated fat is A. butter. B. corn oil. C. lard. D. vegetable shortening.		86	.229
	B. The mineral needed for the proper functioning of the thyroid gland is A. calcium. B. iodine. C. iron. D. phosphorus.	53	53	.399*
	A. The vitamin most essential for bone formation along with calcium and phosphorus is A. thiamin. B. vitamin A. C. vitamin C. D. vitamin D.	54	45	.294*
	A. Carbohydrates are necessary to A. build and repair tissues. B. furnish fuel for energy. C. prevent anemia. D. prevent tooth decay.		28	.294*
	A. The most important role of fiber in the diet is to A. aid in regulation of body temperature. B. aid in digestion and elimination of solid waste. C. form intestinal gases for intestinal motility. D. provide a feeling of satiety or fullness.		25	.202
	A. The cells of the body which are most affected by an iron deficiency are A. brain cells. B. bone cells. C. muscle cells. D. red blood cells.		15	.339*
	B. The minerals that are essential to the formation of healthy bones and teeth are A. calcium and phosphorus. B. calcium and sodium. C. iron and iodine. D. phosphorus and iron.		9	.399*

TABLE 13 - (cont'd)

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
	B. Proteins that provide all of the essential amino acids in the proportions are known as A. conjugated proteins. B. complete proteins. C. incomplete-proteins. D. low-quality proteins.		7	.396*
5	A. Food researchers use the U.S. RDA's to A. analyze the nutritional adequacy of the population. B. determine what nutrients are in food. C. diagnose nutritional deficiency diseases. D. predict the nutritional problems of the elderly.		93	.225*
	B. The most nutritious way to increase your caloric intake if you eat a modified vegetarian diet is to A. cook vegetables in chicken broth. B. French-fry the vegetables. C. saute vegetables in butter. D. use cheese sauce over vegetables.		81	.302*
	A. Maintaining ideal weight is possible by A. eating smaller portions than usual. B. including mostly fruits and vegetables in the diet. C. omitting fats, sweets, and alcohol from the diet. D. taking in only as many calories as you need.	42	62	.367*
	A. The most effective way to reduce sugar in the diet is to A. use honey instead of refined sugar. B. eat fewer foods high in sugar. C. read labels for the product's sugar content. D. select fruits canned in light syrup.	46	57	.254*
	B. Anorexia nervosa is usually the result of a(n) A. glandular malfunction. B. hereditary disorder. C. preference for dieting. D. negative self-concept.	49	60	.249
	B. To add significant amounts of fiber to your diet, you should consume more A. enriched white bread. B. fruit juices and nectars. C. leafy green vegetables. D. polished rice.	53	53	.226
	A. If you are reducing the amount of salt in your diet, you can continue to eat A. bologna, ham, sausage. B. canned soup, corned beef, cheese spread. C. pickles, olives, sauerkraut. D. vegetables, dried beans, nuts.	55	39	.171

TABLE 13 - (cont'd)

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
	A. A guideline recommended in the "Dietary Guidelines for Americans " is to A. eat more refined carbohydrate. B. eat a limited variety of foods. C. decrease sodium in the diet. D. lose 10% of body weight.		34	.192
	B. A guideline that is recommended in the "Dietary Guidelines for Americans" is A. eating refined carbohydrates. B. eating foods with adequate saturated fat. C. increasing sodium in the diet. D. maintaining ideal weight.		26	.315*
	B. A rule to follow for good dental hygiene is to A. eat sweets between meals instead of with meals. B. choose sticky sweets when choosing sweets. C. floss teeth once a week. D. rinse your mouth with water when you can't brush.		26	.287*
	A. Cholesterol build-up may be related to the A. arteries becoming clogged. B. development of varicose veins. C. lungs receiving less oxygen. D. heart working less hard.		19	.239*
	B. A major health problem believed to be caused by too much fat in the diet is A. arthritis. B. coronary heart disease. C. ulcers. D. water retention.		8	.374*
6	B. A fad diet is A. doctor approved. B. based on scientific evidence. C. nutritionally sound. D. often expensive.		30	.501*
7	A. Ideal weight of adults ages 25 and over is based on A. age, height, sex. B. bone size, sex, age. C. height, bone size, age. D. sex, bone size, height.		76	.227*
	B. A well-planned day's menu for a teenager will include this amount of milk. A. 2 6-oz. servings B. 2 8-oz. servings C. 4 6-oz. servings D. 4 8-oz. servings	47	66	.288*

TABLE 13 - (cont'd)

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
B.	If you are trying to reduce sodium in your diet, you should avoid A. candy, cokes, cookies. B. chips, snack crackers, pretzels. C. ice cream, custard, pudding. D. potatoes, corn, beans.	52	56	.434*
B.	When preparing homemade baby foods, you should A. add sugar to make baby foods more appealing. B. freeze for use up to six months later. C. coarsely chop foods that are eaten by other family members. D. use the liquid from cooking vegetables for thinning baby food.	57	45	.274
B.	The factor that most affects the nutritional needs of the elderly person is a(n) A. increased metabolism. B. increased need for protein. C. slower metabolism. D. decreased need for vitamins.	59	43	.502
B.	The groups which need the most calories in their diets is A. adult females. B. adult males. C. teenage boys. D. teenage girls.		21	.349*
A.	In diabetic diets, the nutrient which is usually most controlled is A. cellulose. B. minerals. C. starch. D. sugar.		18	.319*
B.	After learning that she is pregnant, a woman on weight reduction diet should A. continue the diet without concern. B. discuss the diet with her obstetrician. C. omit fats, sweets, and alcohol from the diet. D. take diet pills to speed weight loss.		20	.542*
B.	The best beverage, in terms of nutrition and calories, to serve a 5-year old who is underweight is A. chocolate drink. B. fruit punch. C. skim milk. D. whole milk.		14	.328*
A.	A good snack for an overweight 5-year old would be A. apple slices and carrot sticks. B. celery and cheese sticks. C. celery and onion dip. D. cream cheese on melba toast.		10	.350*

TABLE 13 - (cont'd)

Essential Competency		Test Items	Level of Difficulty	Rank	Point-Biserial r
8	A.	A meal consisting of meatloaf, mashed sweet potatoes, broccoli souffle, bread, and yogurt sundae would be unappealing because it lacks variety in A. color. B. flavor. C. shape. D. texture.	46	55	.296*
	B.	When planning meals, your main source of color should be the A. food. B. garnishes. C. linen. D. tableware.		37	.253
	A.	Survey results indicate that during the next decade the percent of meals eaten away from the home or in restaurants will A. decrease. B. greatly decrease. C. increase. D. remain same.		21	.299*
	B.	Meals will be more appealing if they are A. nutritious. B. similar each day. C. quick to prepare. D. varied.		21	.470*
9	A.	According to the Daily Food Guide, the menu that supplies the most adequate nutrition is A. barbecued chicken, broccoli, corn bread, and milk. B. fried fish, macaroni and cheese, biscuit, and lemonade. C. hot dog on bun, French fries, green beans, and cola drink. D. liver and onions, pinto beans, roll, and iced tea.	46	55	.205
	B.	The vegetable that will take the most time and effort to prepare is A. stuffed celery sticks. B. broccoli with Hollandaise sauce. C. frozen whole kernel corn. D. canned green peas.	54	49	.292*
	B.	The menu that will look the most attractive when served on a plate is A. baked white fish, asparagus, Brussel sprouts, and marinated cucumbers. B. baked white fish, mashed potatoes, cauliflower, and cottage cheese. C. fish sticks, French fried potatoes, green beans, and carrot sticks. D. meat loaf, baked potato, broccoli, and tomato slices.	58	44	.264

TABLE 13 - (cont'd)

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
	B. Variety in meals can be achieved by A. selecting different colored foods. B. using bland flavored foods. C. using foods of similar texture. D. planning to serve all foods hot or cold.		24	.402*
	A. An advantage of weekly menu planning is that you can A. take advantage of unadvertised specials. B. eliminate leftovers. C. take more time to grocery shop. D. avoid overspending at the grocery store.		15	.472*
	A. Leftover foods may be used in family menus to A. conserve time and energy in food preparation. B. help children become accustomed to foods. C. make better use of the microwave oven. D. reduce menu planning time.		13	.300*
10	A. A practice that would conserve energy when using the range is A. roasting the meat ahead of time and reheating it before serving. B. baking the bread in the oven with the meat. C. cooking vegetables thoroughly before turning off heat. D. baking the bread before roasting meat.	55	39	.277*
	A. When you have more time than money, plan menus to stretch your food budget by including A. steaks and chops. B. convenience foods. C. hearty soups and stews. D. frozen entrees.	57	37	.479*
	B. Dovetailing refers to A. doing two or more tasks at once. B. effective shopping techniques. C. energy conservation methods. D. the time needed for meal preparation.	57	45	.402*
	B. Expenditure of time and personal energy can be reduced by A. assembling utensils and ingredients before beginning. B. washing dishes at the end of the day. C. using correct posture when lifting heavy items. D. reading each step of a recipe as you go.		34	.514*

TABLE 13 - (cont'd)

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
	A. A major piece of kitchen equipment included in the "work triangle" is the A. freezer. B. microwave oven. C. sink. D. trash compactor.		19	.373*
	B. To conserve energy in food preparation, you should A. leave electric burners on until food is cooked. B. open the oven door only when necessary. C. preheat the oven well ahead of time. D. use hot water when running the waste disposal.		9	.380*
11	A. An attractive, yet inexpensive way to "dress up" family meals is to use A. colorful straw placemats. B. elaborate centerpieces. C. fine china and silver. D. less available gourmet foods.	45	57	.372*
	A. The arrangement of flatware at a place setting includes the A. fork to the left of the plate. B. glass placed just above the spoon. C. knife blade turned away from the plate. D. teaspoon to the left of the knife.	47	53	.214
	B. Most family meals are served using A. American service. B. buffet service. C. family style service. D. Russian service.	54	49	.369*
14	A. If you use milk infrequently, the form of milk which best meets drinking and cooking purposes is A. evaporated milk. B. fresh, whole milk. C. nonfat dry milk. D. sweetened condensed milk.		72	.248*
	A. If you have never tried the store's brand of frozen fruit, you should buy A. as many packages as you can afford. B. the brand you know. C. one package to check the quality. D. only national brands.		21	.353*
	B. For most families the most expensive category of foods in the family food budget A. milk and milk products. B. meat, fish, and poultry. C. fruits and vegetables. D. breads and cereals.		19	.439*

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
	B. The shopping practice that is most likely to save money on the family food budget is to A. buy mostly convenience foods. B. purchase food and nonfood items at the same time. C. check sales flyers before shopping. D. let the whole family help with shopping.		17	.525*
15	A. Federal food labeling laws require food product labels to include the A. contents stated in units of measure that are in common use. B. list of ingredients beginning with the smallest amount first. C. name and address of the grower. D. product shown in full color.		70	.241*
	B. A benefit of unit pricing is that it helps the consumer A. make food quality comparisons. B. compare differences in food costs. C. determine nutrient value of the food. D. determine the rate of inflation for food costs.		37	.448*
16	B. Bulging or swelling of a can indicates A. a product of inferior quality. B. underpacking of the product. C. spoilage of the product. D. that the can was dropped.		17	.425*
	B. When buying frozen vegetables, you should make sure the package is A. attractive. B. firm. C. soft. D. wet.		12	.522*.
17	B. In comparing USDA grade Prime beef and USDA grade Good beef, USDA Prime beef is A. a better source of protein. B. best prepared by braising. C. lower in total fat content. D. more tender and flavorful.	44	70	.478*
	A. A 46-ounce can is most often used for packing A. juices. B. meats. C. tuna fish. D. vegetables.	60	36	.202
18	A. When compared to handwashing, washing dishes in a dishwasher is likely to result in A. more illness in the family. B. less detergent usage. C. lower energy use. D. more sanitary dishes.	55	39	.387*

TABLE 13- (cont'd)

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
	B. The kitchen design that usually is the most efficient is the A. one wall kitchen. B. parallel wall kitchen. C. L-shaped kitchen. D. U-shaped kitchen.		35	.388*
	B. The feature that is most likely to be optional on a range is a(n) A. oven heat regulator. B. cooking timer. C. surface units. D. oven cleaning device.		29	.516*
	B. Essential kitchen equipment includes A. dishwasher, range, refrigerator. B. microwave oven, range, refrigerator. C. range, refrigerator; sink. D. sink, garbage disposal, range.		12	.482*
	B. The most basic tool for cutting and chopping is a A. blender. B. food processor. C. knife. D. mechanical chopper.		9	.389*
19	B. If a knife and cutting board have just been used to dice raw meat, before using them to cut baked chicken you should A. wipe both with a clean dish cloth. B. wipe both with a paper towel. C. pour a little bleach on both. D. wash, rinse and sanitize both.		31	.299
	B. The most frequent cause of foodborne illness is A. cigarette ashes dropped into food. B. wounds covered by a plastic glove. C. poor personal sanitation. D. cleaned raw fruits and vegetables.		14	.401*
	A. A safety precaution to use when there are small children in the home is to A. block electrical outlets with plants. B. store cleaning products in lower cabinets. C. turn the handle of pots and pans to the outside of the stove. D. use latches on lower cabinet doors.	56	39	.387*
	A. The term "sanitizing" indicates the A. absence of soil. B. removal of most harmful bacteria. C. use of detergent. D. use of dishwasher.		10	.520*
21	B. The key nutrients in the Milk and Cheese Group are A. calcium, iron, protein. B. protein, iron, B vitamins. C. protein, riboflavin, vitamin C. D. riboflavin, calcium, protein.		81	.221

TABLE 13 - (cont'd)

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
	A. Nutrients which supply energy are A. carbohydrate, fat, and vitamins. B. carbohydrate, fat, and water. C. carbohydrate, protein, and fat. D. carbohydrate, protein, and vitamins.	41	67	.214
	A. Foods in the breads and cereal food group are good sources of complex carbohydrates, and may also supply A. vitamin A, vitamin C, and niacin. B. B vitamins, fiber, and iron. C. calcium, phosphorus, and protein. D. vitamin D, protein, and riboflavin.	44	61	.247*
	A. The food that is the highest in saturated fats is A. butter. B. chicken. C. peanut butter. D. soybean oil.	55	39	.227*
	B. The best sources of vitamin A are A. breads and cereals. B. citrus fruits and tomatoes. C. dry beans and dry peas. D. leafy green and deep yellow vegetables.		31	.290*
	B. The nutrient found in high concentrations in foods from the meat groups is(are) A. calcium and phosphorus. B. carbohydrates and B complex vitamins. C. protein. D. vitamins.		26	.515*
	A. Foods in the vegetable-fruit group are valuable because they provide an excellent supply of A. calcium and phosphorus. B. carbohydrate and fat. C. protein and fat. D. vitamins and minerals.		17	.297*
24	A. A good way to cook less tender chicken is A. broiling. B. frying. C. roasting. D. stewing.		96	.202
	B. A characteristic of white yeast bread is A. chewy texture. B. coarse grain. C. dark brown crust. D. mild yeast flavor.		95	.220

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
B.	If fruits and vegetables are added to gelatin salads when the gelatin is the consistency of egg whites, they will be A. discolored. B. evenly distributed. C. more colorful. D. watery.		87	.327*
A.	Fats in yeast breads A. cause the bread to rise. B. help to promote browning. C. promote a fine texture. D. promote tenderness.		86	.376*
A.	The ingredient that can develop the gluten needed for the framework essential for bread is A. eggs. B. fat. C. flour. D. yeast.		80	.198
A.	If fat is present, the volume of whipped egg whites will be A. decreased. B. unaffected. C. increased. D. greatly increased.		76	.226*
A.	One of the methods of moist heat cooking is A. braising. B. broiling. C. frying. D. roasting.		74	.255*
B.	Biscuits that are heavy and compact may be the result of too A. little liquid. B. little flour. C. much kneading. D. much shortening.	41	74	.331*
B.	The ingredient that provides tenderness in a baked product is A. fat. B. liquid. C. salt. D. starch.	42	72	.330*
A.	Pie crust is usually rolled to a thickness of A. 1/8 inch. B. ¼ inch. C. ½ inch. D. 1 inch.		70	.173
B.	Frozen salads are generally A. inexpensive to make. B. low in calories. C. suitable as desserts. D. suitable as entrees.	47	66	.220

TABLE 13 - (cont'd)

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
A.	One objective of meat cookery is A. to develop the flavor of the seasonings. B. to destroy harmful organisms. C. not to change the texture. D. to prepare it for the maximum number of servings.	42	62	.404*
A.	When using a conventional cook top, the best way to prevent the scorching of milk-based foods is to A. add thickening agents before heating. B. cook food in a double boiler. C. have all ingredients at room temperature. D. use low to moderate direct heat.	42	62	.283*
B.	The best way to judge the quality of cheddar cheese is to look for A. a smooth compact texture. B. golden yellow color. C. the longest curing category. D. the U.S. Grade AA shield.	49	60	.387*
B.	Cookies that are poured into a prepared pan to bake are known as A. bar cookies. B. one-step cookies. C. filled cookies. D. refrigerated cookies.	49	60	.335*
A.	The best cooking method for meats from a nutritional standpoint is A. boiling. B. broiling. C. frying. D. sauteeing.	45	57	.237*
A.	Excessive volume in yeast-raised products may be due to A. insufficient yeast. B. insufficient sugar. C. too much salt. D. too much yeast.	47	53	.524*
B.	Meat obtained from a very young calf is A. beef. B. lamb. C. pork. D. veal.	53	53	.442*
A.	The fat which is distributed in the connective tissue of meat is referred to as the meat's A. fell. B. aging. C. marbling. D. tenderness.	49	51	.524*

TABLE 13- (cont'd)

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
A.	Eggs cooked at a high temperature may be A. soft and watery. B. firm and tender. C. hard and tough. D. soft and tender.	51	50	.457*
B.	When preparing milk and cheese dishes, one should use A. high temperatures and long cooking period. B. high temperatures and short cooking period. C. low temperatures and long cooking period. D. low to moderate temperatures and short cooking period.	54	49	.375*
B.	Cooking pork until it is well done A. softens the protein. B. destroys trichina, a harmful organism. C. makes the thiamin more absorbable. D. toughens the connective tissue.	56	47	.354*
A.	In comparison to skimmed milk, homogenized, whole milk A. contains more fat. B. contains less fat. C. has not been pasteurized. D. will separate on standing.	53	46	.427*
B.	The purpose of leavening in bread is to make it A. crusty. B. chewy. C. rise. D. tender.	60	40	.435*
B.	The main purpose for cooking poultry until completely done is to help A. destroy harmful organisms. B. toughen meat fibers. C. reduce meat shrinkage. D. reduce the meat's water content.		35	.450*
A.	When preparing fresh vegetables to preserve nutrient content, the vegetables should be A. cooked at high temperatures. B. cooked in a small amount of water. C. peeled ½" below the top peel. D. soaked for thorough cleaning.		34	.423*
B.	To cook vegetables properly, be sure to A. add baking soda. B. use a small amount of water. C. use a uncovered pan. D. use high heat.		31	.321*

TABLE 13- (cont'd)

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
	A. When preparing salads, you should use foods that are A. attractive to the eye. B. in large pieces or whole. C. similar in color. D. the lowest in cost.		30	.519*
	A. To retain their quality, pastas and cereals should be stored in an area that is A. cool. B. damp. C. hot. D. light.		30	.265*
	A. The type of flour which is most commonly used to prepare yeast bread products at home is A. all-purpose flour. B. cake flour. C. pastry flour. D. winter wheat flour.		27	.378*
	A. A characteristic of a properly prepared cooked cereal is a A. lumpy texture. B. thin consistency. C. pasty texture. D. smooth and creamy texture.		21	.241
	B. In baked items, baking powder is used to A. help the product rise. B. improve the flavor. C. reduce mixing time. D. reduce the amount of salt used.		14	.474*
	A. For the fewest changes in quality, cheese should be stored in the A. freezer, wrapped. B. pantry, wrapped. C. refrigerator, unwrapped. D. refrigerator, wrapped.		14	.409*
28	A. Vegetables will maintain flavor and appearance longer during freezing if they are A. blanched before freezing. B. flash frozen. C. frozen as part of a prepared food item. D. frozen immediately after harvest.		97	.204*
	B. To prevent browning of fruits during freezer storage you should A. freeze fruit in a light sugar solution. B. pack loosely in a freezer container. C. pack tightly in freezer bag. D. use an anti-browning agent before freezing.	49	60	.392*
30	A. A back-of-the-house food service position is the A. bookkeeper. B. cashier. C. host/hostess. D. salad worker.		79	.299*

TABLE 13 - (cont'd)

Essential Competency	Test Items	Level of Difficulty	Rank	Point-Biserial r
	A. An entry-level position in food preparation is a(n) A. assistant cook. B. baker. C. cook's helper. D. head cook.	40	68	.209
	A. The work responsibilities of supervising, planning, and budgeting food service for hospitals or nursing homes best describes the career of a(n) A. consumer consultant. B. administrative dietician. C. purchasing agent. D. research nutritionist.	55	39	.350*
	B. Nationwide, most job opportunities in food service A. are plentiful. B. are scarce. C. are limited to men. D. require a college degree.		40	.430*
31	B. A major responsibility of most front-of-the-house food service employees is A. checking deliveries of food and supplies B. dealing with customers. C. food preparation. D. keeping financial records.	49	60	.379*

All Point-Biserial R values reported at $p \leq .05$ unless otherwise specified by * (* = $p \leq .01$).

(1) Form 1

(2) Form 2

Home Economics Cooperative Education (HECE)

Two forms of the Food Production, Management, and Services test included 216 items representing 52 essential competencies. Of the 64 tests sent out, 27 were returned, with 21 usable in data analyses. Discriminating test items at the .05 level of significance or beyond are identified in Table 15. The following table indicates reliability estimates for tests used:

Table 14

RELIABILITY COEFFICIENTS FOR FOOD PRODUCTION, MANAGEMENT, AND SERVICES TESTS TAKEN BY HECE STUDENTS

Test Form	KR-20 Reliability Coefficient
A	.88
B	.84

Estimates of reliability were very acceptable based upon KR-20 analysis.

Test items for 10 of the 52 essential competencies were discriminating at the .05 level or beyond. The following essential competencies did not have discriminating test items:

10. Relieve or assist other employees during emergencies or rush periods.
11. Plan menus appropriate for type of food service.
19. Take inventories of food, utensils, and equipment.
31. Keep food service facility free of hazardous conditions and unsafe equipment and materials.
32. Maintain high safety standards in food preparation, service, and cleanup tasks.
35. Follow federal, state, and local sanitation codes for food service establishments.
36. Maintain acceptable standards in personal grooming and hygiene.
38. Use sanitary food handling, preparation, and storage techniques.
51. Identify, select, and use large and small food service equipment.
54. Receive and inspect food and supplies.
61. Use food preparation and service terms correctly.
62. Identify a variety of foods: their types, forms, and properties.

65. Assemble and prepare ingredients (or suitable substitutes) and equipment.
66. Measure and weigh foods according to specifications in standard recipes.
67. Use a variety of cooking techniques.
68. Utilize convenience foods in food preparation.
69. Use correct time and temperatures for energy-efficient food preparation.
70. Identify, use and store spices, herbs, and extracts properly.
72. Prepare appetizers and garnishes.
73. Prepare hot and cold sandwiches.
74. Prepare salads and salad dressings.
75. Prepare fruits and vegetables.
76. Prepare soups, sauces, and gravies.
77. Prepare cereal and pasta products.
78. Prepare eggs and egg dishes.
79. Prepare cheeses and cheese dishes.
80. Prepare meats, seafoods, and poultry.
81. Prepare puddings, custards, souffles, gelatin desserts, and frozen desserts.
82. Prepare fruit desserts and fried desserts.
84. Make cookies, cakes, pies, pastries, and meringues.
85. Prepare and use icings, frostings, and fillings.
90. Observe, test, and evaluate quality of foods being prepared using sanitary procedures.
92. Hold or store prepared foods until needed.
93. Plan work schedule so foods are ready at serving time.
104. Serve food and beverages in prescribed manner.
109. Handle and report complaints as directed.
113. Itemize and total price of each order.
114. Present check to customer, and accept payment or refer customer to cashier.
116. Handle payments (cash, checks, credit cards), operating cash register, making change, and writing receipts.
120. Pack and transport food, beverages, utensils, and equipment.
122. Maintain quality of transported food.

Again, these essential competencies could be assessed by non-testing devices.

Table 15

HOME ECONOMICS COOPERATIVE EDUCATION
TEST ITEMS HAVING ACCEPTABLE LEVELS OF DIFFICULTY AND/OR DISCRIMINATION

N = 21

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
52	A.[1] A light, thin, layer of shortening on a grill forming a slick surface, means the grill is A. dirty. B. primed. C. ruined. D. seasoned.		91	.652
	B.[2] A freezer should be defrosted A. daily. B. weekly. C. monthly. D. once or twice a year.		75	.683
	A. If the freezer stops working, you should A. keep the door shut until repaired. B. open the door and check for thawing hourly. C. put in more cold food to lower temperature. D. remove part of the food to reduce loss.		77	.659
56	A. Non-food items should be stored A. before food items. B. in a cool, moist location. C. in the dry storage area. D. separate from food products.	55	35	.643
71	A. Tea should be prepared by A. boiling. B. perking. C. simmering. D. steeping.		77	.764*
83	A. When making yeast breads, during the fermentation process the dough A. simply rests and diminishes in same size. B. should at least double in size. C. should remain the same size. D. should triple in size.	46	50	.675
88	B. The most suitable garnishes for baked ham are A. chutney and coconut. B. lemon and lime wedges. C. parsley sprigs and mint leaves. D. pineapples, cherries, and cloves.	40	51	.886*
91	B. Standard portions A. ensure that everyone gets the same serving size. B. depend on the size of the serving plate. C. apply only to entrees and desserts. D. are in approximate portions to the weight of the customer.	50	39	.821*

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported at $p \leq .05$)

TABLE 15 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
95	B. A well-equipped side stand will A. increase food costs. B. reduce the need for kitchen personnel. C. save trips to the kitchen. D. store all needed items for meal service.		75	.683
98	A. The acceptable exception to the general rules of table service is A. if one person finishes eating before others, remove that person's dishes. B. if one person's food is ready before the others, serve it first. C. slide plates across to persons on far side of a booth. D. when serving a booth, you may reach across one guest to serve another.		91	.652
	B. When seating guests in a restaurant one should seat A. a blind person near the door. B. a family with a child in a highchair out of traffic lanes. C. guests according to their social position or importance. D. noisy, disruptive types next to quieter ones.	50	39	.698
99	A. When writing an order, the waiter/waitress should A. arrange the orders to ensure service to the proper person. B. list prices in order from the least to the most expensive. C. place the entrees on the left-hand corner of the check. D. randomly record the orders as they are given.		64	.604
	B. An example of selling through suggestions is A. describing foods that go well with the entree ordered. B. explaining descriptively how a food is prepared. C. repeating a customer's order before taking it to the kitchen. D. telling a customer that a beverage is included with the meal.	40	51	.886*
	A. If a guest is in a hurry and orders an entree that has a long preparation time, the waiter/waitress should A. ask the chef to speed up the food preparation on that order. B. say nothing about the time you needed to prepare the meal. C. suggest an alternative that you know will be ready sooner. D. tell the guest the length of time needed if asked.		23	.620

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
110	A. When bussing tables, you should A. place all soiled items on a tray. B. put soiled dishes of a kind together. C. brush crumbs onto the floor. D. wipe flatware carefully with a napkin.		77	.764*

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported at $p \leq .05$)

Coordinated Vocational-Academic Education (CVAE)

Two forms of the Food Production, Management, and Services test included 216 items representing 52 essential competencies. Of the 160 tests distributed, 108 were returned. Discriminating test items at the .05 level of significance or beyond are identified in Table 17. The following table indicates estimates of reliability for the instruments administered:

Table 16

RELIABILITY COEFFICIENTS FOR FOOD PRODUCTION, MANAGEMENT, AND SERVICES TESTS TAKEN BY CVAE STUDENTS

Test Form	KR-20 Reliability Coefficient
A	.76
B	.81

Estimates of reliability were acceptable based upon KR-20 analysis. A somewhat lower reliability coefficient than found in some of the other tests could be attributed to the homogeneous group to which the test versions were given.

Test items for 40 of the 52 essential competencies were discriminating at the .05 level or beyond. The following essential competencies did not have discriminating test items:

68. Utilize convenience foods in food preparation.
69. Use correct time and temperatures for energy-efficient food preparation.
78. Prepare eggs and egg dishes.
80. Prepare meats, seafoods, and poultry.
81. Prepare puddings, custards, souffles, gelatin desserts, and frozen desserts.
82. Prepare fruit desserts and fried desserts.
85. Prepare and use icings, frostings, and fillings.
90. Observe, test, and evaluate quality of foods being prepared using sanitary procedures.

93. Plan work schedule so foods are ready at serving time.
110. Clear items from tables, and remove soiled items from tables and stations.
116. Handle payments (cash, checks, credit cards), operating cash register, making change, and writing receipts.
122. Maintain quality of transported food.

The majority of the essential competencies not covered are in the psychomotor domain and can be assessed through non-testing devices more easily than by objective testing.

Pre-Employment Laboratory Education (PELE)

Two forms of the Food Production, Management, and Services test included 216 items representing 52 essential competencies. Of the 110 tests distributed, 96 were returned. Discriminating test items at the .05 level of significance or beyond are identified in Table 19. The following table indicates estimates of reliability for administered tests:

Table 18

RELIABILITY COEFFICIENTS FOR FOOD PRODUCTION, MANAGEMENT, AND SERVICES TESTS TAKEN BY PELE STUDENTS

Test Form	KR-20 Reliability Coefficient
A	.85
B	.85

Measures of reliability were very acceptable based upon KR-20 analysis.

Test items for 36 of the 52 essential competencies were discriminating at the .05 level or beyond. The following essential competencies did not have discriminating test items:

11. Plan menus appropriate for type of food service.
35. Follow federal, state, and local sanitation codes for food establishments.
61. Use food preparation and service terms correctly.

68. Utilize convenience foods in food preparation.

69. Use correct time and temperatures for energy-efficient food preparation.

70. Identify, use, and store spices, herbs, and extracts properly.

74. Prepare salads and salad dressings.

76. Prepare soups, sauces, and gravies.

79. Prepare cheeses and cheese dishes.

80. Prepare meats, seafoods, and poultry.

81. Prepare puddings, custards, souffles, gelatin desserts, and frozen desserts.

85. Prepare and use icings, frostings, and fillings.

90. Observe, test, and evaluate quality of foods being prepared using sanitary procedures.

92. Hold or store prepared foods until needed.

93. Plan work schedule so foods are ready at serving time.

120. Pack and transport food, beverages, utensils, and equipment.

The essential competencies for which there were no significantly discriminating test items are in the psychomotor domain and could be assessed more effectively by observation and performance tests than by objective tests.

Vocational Education for the Handicapped (VEH)

Two forms of the Food Production, Management, and Services test included 216 items representing 52 essential competencies. Of the 140 tests distributed, 97 were returned. Discriminating test items at the .05 level of significance or beyond are identified in Table 21. Student performance varied significantly. Several teachers indicated that they read the test questions to their students with extremely low reading abilities. Many indicated that their students were on primer to second grade reading levels. The following table indicates estimates of reliability for tests given:

Table 20

RELIABILITY COEFFICIENT FOR FOOD PRODUCTION, MANAGEMENT, AND SERVICES TESTS TAKEN BY VEH STUDENTS

Test Form	KR-20 Reliability Coefficient
A	.91
B	.87

Estimates of reliability were very acceptable based upon KR-20 analysis.

Test items for 35 of the 52 essential competencies were discriminating at the .05 level or beyond. The following essential competencies did not have discriminating test items:

10. Relieve or assist other employees during emergencies or rush periods.
11. Plan menus appropriate for type of food service.
19. Take inventories of food, utensils, and equipment.
31. Keep food service facility free of hazardous conditions and unsafe equipment and materials.
32. Maintain high safety standards in food preparation, service, and cleanup tasks.
54. Receive and inspect food and supplies.
62. Identify a variety of foods; their types, forms, and properties.
68. Utilize convenience foods in food preparation.
72. Prepare appetizers and garnishes.
74. Prepare salads and salad dressings.
78. Prepare eggs and egg dishes.
90. Observe, test, and evaluate quality of foods being prepared using sanitary procedures.
104. Serve food and beverages in prescribed manner.
109. Handle and report complaints as directed.
113. Itemize and total price of each order.
116. Handle payments (cash, checks, credit cards), operating cash register, making change, and writing receipts.
122. Maintain quality of transported food.

Since many of these essential competencies are written in the affective and psychomotor domains, achievement of these essential competencies could be assessed more effectively by non-testing devices assessing performance through observation rather than through objective testing.

COORDINATED VOCATIONAL - ACADEMIC EDUCATION
TEST ITEMS HAVING ACCEPTABLE LEVELS OF DIFFICULTY AND/OR DISCRIMINATION
N = 108

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
10	B.[2] If a fellow food server has six tables to serve and one to set up while no one is seated in your area, you should A. let the server set up the table when there is time. B. set up the table, expecting the favor to be repaid. C. set up the table, if they agree to split their tips with you. D. set up the table, without expecting repayment.		66	.419*
11	B. A menu to be served to nursing home residents of baked fish, scalloped potatoes, and cauliflower could best be improved by A. adding vanila custard for dessert. B. adding parsley to garnish the plate. C. replacing the cauliflower with pureed peas. D. replacing the cauliflower with greenbeans.		46	.463*
	A.[1] Cycle menus are best used for A. constant re-use each year. B. coordinating worker schedules. C. saving time in menu planning. D. planning use of left-over food.		39	.366*
	A. The most appropriate snack for children would be A. a candy bar. B. gelatin with fruit. C. potato chips. D. raspberry sherbert.	43	20	.358*
19	A. Taking inventory can be speeded up if A. it is taken in the order stock is arranged. B. items are arranged randomly in the storeroom. C. one person takes the inventory. D. the storeroom is arranged by grades.		59	.298
31	A. The responsibility for accident prevention in any food service establishment belongs to A. all employees and management. B. each shift supervisor. C. the manager and supervisor. D. the supervisor and specified employees.		86	.394*
32	A. Spilled foods and liquids should be cleaned up A. after serving hours. B. by the cleanup crew. C. during a slow period. D. immediately.		39	.795*

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported at $p \leq .05$)

TABLE 17-(cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	B. When an object is lifted, the greatest amount of weight should be carried by the A. abdominal muscles. B. back muscle. C. chest muscles. D. leg muscles.		27	.477*
	A. To prevent accidents with knives A. be careful when opening cans with a knife. B. pick up knives by the handle. C. quickly catch a falling knife. D. use small knives rather than large ones.	55	11	.388*
35	B. Standards for sanitation in food service are established by laws known as A. FDA regulations. B. OSHA regulations. C. sanitary regulations. D. USDA regulations		66	.492*
36	B. To wash hands properly, rub lathered hands together, using friction, for about A. 10 seconds. B. 20 seconds. C. 40 seconds. D. 60 seconds.		82	.392*
	A. After washing, hands should be rinsed thoroughly A. by immersing in a deep basin of clean water. B. by immersing in water containing disinfectant. C. under running water from fingertips to wrists. D. under running water from wrists to fingertips.		52	.282
	A. The most common source of food contamination is A. equipment. B. facilities. C. food. D. people.		52	.443*
	A. To wash hands properly, A. apply disinfectant soap to dry fingertips, then wet hands. B. use a damp washcloth, then lather hands and wrists. C. use a finger nail brush on nails and hands. D. moisten hands, then lather beyond wrists.	45	18	.484*
	A. In most food service jobs, fingernails should be A. a fashionable length. B. attractively polished. C. long and tapered. D. short and unpolished.	55	11	.346
38	B. During refrigeration, bacteria growth in foods will A. be eliminated. B. be slowed but not eliminated. C. continue at a normal rate. D. increase rapidly.		61	.301

TABLE 17-(cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. The item most likely to be involved in an outbreak of food-borne illness is A. apricots. B. meat salad sandwiches. C. rice. D. whole-wheat bread.		59	.437*
51	B. The type of food cart used to move served meal trays from one place to another is A. bakery cart. B. banquet cart. C. bulk food cart. D. combination hot and cold cart.		87	.468*
	A. When preparing cake batters using a mixer, the bowl should be no more than A. ¼ to ½ full. B. ½ to 2/3 full. C. 2/3 to 3/4 full. D. 3/4 to completely full.		92	.292
	A. When cleaning a food slicer A. remove the blade guard before starting the machine. B. use a metal instrument to scrape off food particles. C. use warm sanitizing solution. D. wash the motor with warm water.		86	.336
	B. Before removing food from the food cutter or chopper, after turning the machine off A. insert a spatula to stop the blades. B. remove the guard. C. wait for the knives to stop rotating. D. wipe the blades carefully.		66	.469*
	B. The oven which cooks by vibrating the molecules at very high speeds is a A. convection oven. B. microwave oven. C. reconstitution oven. D. revolving oven.		58	.451*
	A. The type of oven which has a fan to increase air circulation is a A. convection oven. B. microwave oven. C. pizza oven. D. reconstitution oven.		43	.278
	B. To incorporate air into light mixtures, the mixer attachment to use is the A. dough hook. B. flat beater. C. pastry knife. D. wire whip.	54	16	.346*

TABLE 17- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
52	B. A badly worn can opener blade is dangerous because it may A. contaminate food in the can. B. cut the operator using it. C. drop metal shavings into food. D. fail to open cans.		66	.296
	A. Spilled or burned food should be scraped off the hot top range A. at the end of the day. B. hourly. C. immediately. D. twice a day.	47	16	.489*
	A. The blade of the can opener should be wiped with a damp sanitized cloth A. after each operation. B. once each day. C. twice each week. D. once a month.	47	16	.424*
54	B. When receiving food and supplies, checks should be made of A. all items. B. frozen items. C. perishable items. D. selected items.		61	.261
	B. The best time to correct errors in deliveries is A. immediately after the delivery person leaves. B. while the delivery person is still there. C. within a week after the delivery. D. within 24 hours following delivery.		10	.367*
56	B. For the most efficient energy use, refrigerators and freezers should A. be filled as full as possible. B. be opened only after identifying products needed. C. have no space between containers. D. have their shelves lined with plastic.		61	.319
	B. In the dry storage area, it is important to store items A. according to the type of product. B. at least 10 inches off the floor. C. just delivered in front of those already on the shelf. D. wherever space is available.		51	.554*
	A. The dry storage area should A. be dry and well ventilated. B. dimly lit. C. include space for non-food items. D. have a warm temperature.	45	18	.335

TABLE 17- (cont'd)

Essential Competency		Test Item	Level of Difficulty	Rank	Point-Biserial r
	A.	The product which may be stored in the refrigerator up to three days covered with crushed ice is A. eggs. B. fresh fish. C. fresh meat. D. fresh poultry.		9	.277
60	A.	The purpose of standardized recipes is to A. allow creativity on the part of the food preparers. B. increase variety in food selection. C. insure the nutritional adequacy of food items. D. maintain quality of food items prepared.		74	.452*
61	B.	Chop means to A. cut into large pieces. B. cut in medium size to small pieces. C. cut into very small pieces. D. shred into thin strips.		51	.437*
62	A.	Food products commonly classified as pasta include A. buckwheat, spaghetti and macaroni. B. bulgar, macaroni and noodles. C. macaroni, noodles and rice. D. macaroni, noodles and spaghetti.		43	.446*
65	A.	A 32 oz. can yields approximately A. 4 cups. B. 3¼ cups. C. 3 cups. D. 2¼ cups.		39	.395*
66	B.	Four quarts equal A. peck. B. 4 pounds. C 1 gallon. D. 3 liters.		46	.333
	A.	The most accurate method of measuring one cup of milk would be to use a A. coffee cup. B. metal measuring cup. C. one-cup, nested D. transparent measuring cup.	43	20	.298
67	A.	The best method for incorporating air into a batter or dough is by A. beating the batter or dough. B. beating egg yolks until foamy. C. creaming shortening until light. D. sifting sugar and flour.		74	.570*
	B.	Saute means to A. brown lightly in fat and steam until done. B. brown lightly in a small amount of fat. C. cook in lightly salted water. D. cook in deep fat.	46	20	.342*

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
70	A. Spices and herbs should be stored in A. a cool, dry place. B. dry, well lighted place. C. open container. D. the refrigerator.		27	.375*
71	B. Coffee and tea should not be allowed to stand, or be reheated, as they will acquire a A. bitter taste. B. mild taste. C. sour taste. D. sweet taste.		27	.589*
72	B. Colorful, spicy, or highly seasoned portions of food that are small enough to be finger foods or eaten with small picks are commonly known as A. canapes. B. condiments. C. garnishes. D. hors d'oeuvres.		34	.461*
73	B. When refrigerated, a tray of sandwiches should be A. covered loosely with a clean cloth. B. covered with moisture-proof wrap. C. covered loosely with moisture-proof wrap. D. left uncovered.		46	.383*
74	A. In preparing green salads, the salad maker should A. cut the green into uniform pieces. B. hold them at room temperature until served. C. prepare the salad well in advance. D. tear the greens by hand.		86	.498*
75	A. A good method of cooking vegetables to prevent loss of nutrients is to A. baste with butter and broil. B. cover with chicken broth and boil. C. cut into large pieces and steam. D. dip in batter and fry.		74	.313
76	A. The most common thickening agent used for cream soup is A. arrowroot. B. cornstarch. C. flour. D. rice flour.		52	.322
77	B. Well prepared cooked cereal should be A. chewy. B. free of lumps. C. grainy. D. pasty.		35	.503*
79	A. When cheese is overcooked, it becomes A. chewy and flaky. B. grainy and tough. C. smooth and tender. D. tough and stringy.		59	.390*

TABLE 17- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
83	A. When making yeast breads, during the fermentation process the dough A. simply rests and diminishes in same size. B. should at least double in size. C. should remain the same size. D. should triple in size.		43	.436*
84	A. Pie crust should be rolled to a thickness of A. 1/8 inch. B. ¼ inch. C. ½ inch. D. 3/4 inch.		43	.282
	B. When making rolled cookies, the dough will be easier to handle if you A. chill the dough before rolling it out. B. cut the cookies in irregular patterns and reroll often. C. roll all of the dough out at one time, do not reroll. D. work in 1 to ½ cups flour.		35	.532*
	B. When rolling out pie crust, you should roll the dough from A. left to right. B. one edge to the opposite edge. C. the center to the edge. D. the edges to the center.		27	.318
88	A. A proper garnish for fish would be A. apple wedges. B. lemon wedges. C. water chestnuts. D. sweet pickles.		43	.386*
	B. The most suitable garnishes for baked ham are A. chutney and coconut. B. lemon and lime wedges. C. parsley sprigs and mint leaves. D. pineapples, cherries, and cloves.		31	.332
91	B. The part of a dipper which measures the food is called the A. bowl. B. utensil. C. cup. D. container.		51	.420*
92	A. Hot foods should be held at A. 40° to 140°F (4.4°to 60°C). B. 40°F (4.4°C) or below. C. 140°F (60°C) or above. D. 165° to 170°F (73.9° to 76.7°C).		59	.273

TABLE 17- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
95	B. A well-equipped side stand will A. increase food costs. B. reduce the need for kitchen personnel. C. save trips to the kitchen. D. store all needed items for meal service.		87	.303
	B. Opening duties include A. emptying relish dishes. B. setting up tables or counter. C. washing and drying table tops. D. washing ash trays.		41	.481*
98	B. If one guest has finished eating before others at the table, you should A. provide the guest check(s) for the table. B. present separate checks as each guest finishes. C. refill the beverage glasses and offer the one guest dessert. D. wait until all are finished, then offer further service.		82	.629*
	B. When seating guests in a restaurant one should seat A. a blind person near the door. B. a family with a child in a highchair out of the traffic lanes. C. guests according to their social position or importance. D. noisy, disruptive types next to quieter ones.		79	.440*
	A. The acceptable exception to the general rules of table service is A. if one person finishes eating before others, remove that person's dishes. B. if one person's food is ready before the others, serve it first. C. slide plates across to persons on far side of a booth. D. when serving a booth, you may reach across one guest to serve another.		74	.291
	A. When seating a large party, the best seat should be offered to the A. elderly lady. B. eldest man. C. youngest lady. D. youngest man.		43	.612*
	B. If one guest at a table has drunk all of his/her water, but the other guests at the table still have almost full glasses of water, you should A. ask if you may refill the empty glass and ask the other guests if they would like more water. B. ignore the empty glass and let the guest call you if more water is needed. C. wait until two glasses are empty so you can make one trip. D. wait until all of the glasses are empty so you can make one trip.		31	.344*

TABLE 17- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
99	A. If a guest is in a hurry and orders an entree that has a long preparation time, the waiter/waitress should A. ask the chef to speed up the food preparation on that order. B. say nothing about the time needed to prepare the meal. C. suggest an alternative that you know will be ready sooner. D. tell the guest the length of time needed if asked.		52	.277
	B. The customer's order should be taken A. as soon as the customer is seated. B. five minutes after the customer is seated. C. when the customer puts the menu down. D. whenever the waitress/waiter has time.		82	.344*
	B. Water glasses and coffee cups should be refilled A. as each course is served. B. after each course is removed. C. as needed during meal. D. when requested by the guest.		66	.296
	B. When customers have finished with their main course, the waiter/waitress should A. ask if they would like to have a dessert. B. take them a popular dessert. C. say "you must have a piece of our apple pie." D. take them the check immediately.		66	.580*
	A. A waiter/waitress should A. not ask too many questions when taking orders. B. suggest and help the guest with menu choices in a friendly manner. C. take the order and not say anything. D. take the order from the customer's right.		59	.478*
104	B. When handling plates, platters, or other pieces of dinnerware, you should A. place your thumb just inside the rim of the dish. B. place your thumb on the upper edge of the dish. C. support the dish with the entire hand from underneath the dish. D. use both hands to pick up and serve.		91	.294
	B. When serving beverages one should A. place the handles in the six o'clock position. B. place the cups slightly to the right of the flatware. C. serve beverages from the customer's left. D. take the cup in right hand when refilling it.		79	.429*

TABLE 17- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. When the salad is served as a separate course, it is placed A. directly above the dinner plate. B. in the center of the cover. C. to the customer's left. D. to the customer's right.		30	.363*
109	B. If a customer has found a foreign object in the food, the waiter/waitress should A. apologize and replace the food at no charge. B. call the manager to verify the situation. C. offer to replace the food at a small charge. D. report the cook at once for carelessness.		79	.359*
113	A. When preparing the customer's check, you should A. automatically include in a 15% tip. B. list the food items served. C. list the items served with a grand total. D. itemize each menu item ordered by price.		86	.296
114	B. When a customer has finished the main course and indicates that no dessert is wanted, the waiter/waitress should A. present the check. B. refill the beverage and ask, "may I get you something else?" C. refill the beverage and present the check. D. use suggestive selling.		76	.306
	A. If a party of customers has ordered dessert, the waiter/waitress should A. present the check, then serve dessert. B. serve dessert, present the check, then refill coffee cups. C. serve dessert, refill coffee cups, then present the check. D. serve dessert, then present the check.		36	.290
120	B. For transportation to the site of a catered function, glasses, punch cups, and tea/coffee cups should be placed in A. cloth pouches. B. divided carriers. C. metal cases. D. paper sacks.		51	.266

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported at $p \leq .05$)

Table 19

PRE-EMPLOYMENT LABORATORY EDUCATION
TEST ITEMS HAVING ACCEPTABLE LEVELS OF DIFFICULTY
AND/OR DISCRIMINATION
N = 96

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
10	B.[2] If a fellow food server has six tables to serve and one to set up while no one is seated in your area, you should A. let the server set up the table when there is time. B. set up the table, expecting the favor to be repaid. C. set up the table, if they agree to split their tips with you. D. set up the table, without expecing repayment.		19	.298
19	A.[1] Taking inventory can be speeded up if A. it is taken in the order stock is arranged. B. items are arranged randomly in the storeroom. C. one person takes the inventory. D. the storeroom is arranged by grades.		29	.288
31	A. The responsibility for accident prevention in any food service establishment belongs to A. all employees and management. B. each shift supervisor. C. the manager and supervisor. D. the supervisor and specified employees.		18	.426*
32	A. Injuries involved in handling materials are most likely to result from A. falls. B. fatigue. C. lifting. D. slipping.	46	48	.335
	B. Workers are most often cut with knives that are A. dull. B. sharp. C. long. D. short.	48	50	.422*
	B. When an object is lifted, the greatest amount of weight should be carried by the A. abdominal muscles. B. back muscle. C. chest muscles. D. leg muscles.		21	.493*
	A. To avoid burns, you should A. leave pans uncovered. B. lift pan covers away from you. C. lift pan covers toward you. D. use thick, damp hot pads to lift lids.		18	.417*

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported as $p \leq .05$)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. Spilled foods and liquids should be cleaned up A. after serving hours. B. by the cleanup crew. C. during a slow period. D. immediately.		12	.417*
	A. To prevent accidents with knives A. be careful when opening cans with a knife. B. pick up knives by the handle. C. quickly catch a falling knife. D. use small knives rather than large ones.		9	.478*
	B. The laws which affect food service businesses on a day-to-day basis are enforced by A. state and local health authorities. B. the federal government. C. the state restaurant association. D. the U.S. Center for Disease Control.		9	.358
36	B. Freezer temperatures should be maintained at A. below -20°F. B. -20° to -10°F. C. -10° to 0°F. D. 0°to 32°F.		82	.370*
	A. After washing, hands should be rinsed thoroughly A. by immersing in a deep basin of clean water. B. by immersing in water containing disinfectant. C. under running water from fingertips to wrists. D. under running water from wrists to fingertips.		27	.384*
	A. The most common source of food contamination is A. equipment. B. facilities. C. food. D. people.		18	.405*
	B. After washing and rinsing, hands should be dried A. by shaking vigorously until dry. B. on a clean corner of an apron or kitchen towel. C. with a clean terrycloth hand towel. D. with a paper towel or hot air dryer.		14	.280
	A. In most food service jobs, fingernails should be A. a fashionable length. B. attractively polished. C. long and tapered. D. short and unpolished.		9	.305
38	A. Food service establishments should use foods A. as needed. B. as soon as delivered. C. on a "first in - first out" basis. D. on a "first in - last out" basis.	48	44	.340

TABLE 19- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. The danger zone in which harmful micro-organisms grow rapidly is A. 0-32°F. B. 32-45°F. C. 45-140°F. D. 140-212°F.	48	29	.357
	A. The item most likely to be involved in an outbreak of food-borne illness is A. apricots. B. meat salad sandwiches. C. rice. D. whole-wheat bread.		14	.370*
51	A. Freezer temperature should be maintained at A. below -20°F. B. -20° to -10°F. C. -10° to 0°F. D. 0° to 32°F.		80	.291
	A. When using the range top, it is important to A. replace burners regularly. B. select the burner size to fit the pot or pan. C. start cooking on high heat. D. start cooking on low heat.	50	41	.330
	B. When dicing celery the knife to use is the A. butcher. B. slicing. C. French. D. paring.	54	40	.418*
	B. The oven which cooks by vibrating the molecules of food at very high speeds is a A. convection oven. B. microwave oven. C. reconstitution oven. D. revolving oven.	58	33	.451*
	A. The cutting device used for removing the tops from radishes is a A. cutter. B. grater. C. paring knife. D. peeler.		15	.367*
	B. Before removing food from the food cutter or chopper, after turning the machine off A. insert a spatula to stop the blades. B. remove the guard. C. wait for the knives to stop rotating. D. wipe the blades carefully.		13	.386*
52	A. The vacuum coffee maker should be cleaned after each use with a brush and A. an abrasive cleaner. B. cold water. C. detergent. D. hot water.		91	.419*

TABLE 19- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	B. When cleaning or working with the individual toaster, always A. be sure it is turned off. B. check the regulator. C. remove the baskets. D. unplug the toaster.		21	.353
54	B. The best time to correct errors in deliveries is A. immediately after the delivery person leaves. B. while the delivery person is still there. C. within a week after the delivery. D. within 24 hours following delivery.		8	.379*
	B. When receiving food and supplies, checks should be made of A. all items. B. frozen items. C. perishable items. D. selected items.		7	.295
56	A. Non-food items should be stored A. before food items. B. in a cool, moist location. C. in the dry storage area. D. separate from food products.	44	53	.575*
	B. Cans with swelled tops or bottoms should be A. checked for abnormal odor, color, or texture. B. discarded. C. opened and tasted. D. used immediately.		24	.370*
	A. The dry storage area should A. be dry and well ventilated. B. dimly lit. C. include space for non-food items. D. have a warm temperature.		18	.401*
60	B. An example of information included in a standardized recipe is A. number of calories. B. storage temperature. C. type of utensils to be used. D. weight of food item prepared.		73	.303
	A. Food measurements are standardized for A. consistent results. B. convenience. C. saving money. D. saving time.	40	63	.475*
	A. The purpose of standardized recipes is to A. allow creativity on the part of food preparers. B. increase variety in food selection. C. reduce the amount of food preparation needed. D. maintain quality of food items prepared.	52	38	.365*

TABLE 19- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
62	A. Food products commonly classified as pasta include A. buckwheat, spaghetti and macaroni. B. bulgar, macaroni and noodles. C. macaroni, noodles and rice. D. macaroni, noodles and spaghetti.		18	.548*
65	A. Tools for measuring dry ingredients should have A. a pouring lip or spout. B. a rim above the "full cup" line. C. graduated measurements marked for ounces. D. no rim or pouring spout.		73	.435*
	A. A 32 oz. can yields approximately A. 4 cups. B. 3½ cups. C. 3 cups. D. 2½ cups.	46	48	.298
66	A. Two cups equal A. 8 ounces. B. 16 ounces. C. 1 quart. D. 3 pints.	60	32	.435*
	B. Four quarts equal A. peck. B. 4 pounds. C. 1 gallon. D. 3 liters.		11	.604*
67	B. Saute means to A. brown lightly in fat and steam until done. B. brown lightly in a small amount of fat. C. cook in lightly salted water. D. cook in deep fat.		9	.423*
71	B. Coffee and tea should not be allowed to stand, or be reheated, as they will acquire a A. bitter taste. B. mild taste. C. sour taste. D. sweet taste.	56	38	.521*
72	B. Colorful, spicy, or highly seasoned portions of food that are small enough to be finger foods or eaten with small picks are commonly known as A. canapes. B. condiments. C. garnishes. D. hors d'oeuvres.	58	33	.352
	A. Decorations used on foods to make them more attractive are called A. additives. B. condiments. C. dressings. D. garnishes.		15	.580*

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
73	A. To prevent the sandwich filling from soaking into the bread, spread the bread with A. cream cheese. B. mayonnaise. C. softened butter. D. spicy mustard.	42	59	.325
75	A. A good method of cooking vegetables to prevent loss of nutrients is to A. baste with butter and broil. B. cover with chicken broth and boil. C. cut into large pieces and steam. D. dip in batter and fry.	52	38	.481*
77	A. Well-cooked long-grain rice should be A. dry and grainy. B. fluffy and dry. C. fluffy and moist. D. moist and sticky.		108	.289
	B. Well prepared cook cereal should be A. chewy. B. free of lumps. C. grainy. D. pasty.	54	40	.581*
	B. Pasta should be cooked in rapidly boiling water until it is A. slightly mushy. B. tender but firm. C. very chewy. D. slightly sticky.		24	.411*
78	B. The green ring around the yolk in hard-cooked eggs is caused by A. using poor quality eggs. B. using eggs that are too fresh. C. overcooking. D. undercooking.		30	.449*
82	A. Fried desserts, such as fried pies, are not usually produced in food service businesses "from scratch" because they A. are not a popular dessert. B. cannot be saved from one meal to the next. C. require a large amount of preparation time. D. require special preparation equipment.	46	48	.384*
83	A. When preparing quick breads, fill muffin cups and loaf pans A. ¼ full. B. 1/3 full. C. ½ full. D. 2/3 full.		89	.345
	A. When making yeast breads, during the fermentation process the dough A. simply rests and diminishes in same size. B. should at least double in size. C. should remain the same size. D. should triple in size.	56	36	.293

TABLE 19- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
84	B. When making rolled cookies, the dough will be easier to handle if you A. chill the dough before rolling it out. B. cut the cookies in irregular patterns and reroll often. C. roll all of the dough out at one time, do not reroll. D. work in 1 to ½ cups flour.	54	40	.295
	B. When rolling out pie crust, you should roll the dough from A. left to right. B. one edge to the opposite edge. C. the center to the edge. D. the edges to the center.	58	33	.543*
88	B. The most suitable garnishes for baked ham are A. chutney and coconut. B. lemon and lime wedges. C. parsley sprigs and mint leaves. D. pineapples, cherries, and cloves.		26	.456*
	A. A proper garnish for fish would be A. apple wedges. B. lemon wedges. C. water chestnuts. D. sweet pickles.		15	.351
91	B. The part of a dipper which measures the food is called the A. bowl. B. utensil. C. cup. D. container.		69	.291
	A. Equipment commonly used for portioning foods in standardized serving amounts include A. knives. B. ladles. C. measuring cups. D. spoons.	48	44	.422*
	B. Standard portions A. ensure that everyone gets the same serving size. B. depend on the size of the serving plate. C. apply only to entrees and desserts. D. are in approximate portions to the weight of the customer.	60	30	.604*
95	B. A well-equipped side stand will A. increase food costs. B. reduce the need for kitchen personnel. C. save trips to the kitchen. D. store all needed items for meal service.	46	53	.313
	A. The group of tables or seats for which a waiter/waitress will be responsible is known as the A. action area. B. duty area. C. station. D. territory.	48	44	.512*

TABLE 19-(cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
98	B. When seating guests in a restaurant one should seat A. a blind person near the door. B. a family with a child in a highchair out of traffic lanes. C. guests according to their social position or importance. D. noisy, disruptive types next to quieter ones.	52	44	.355
	B. If one guest at a table has drunk all of his/her water, but the other guests at the table still have almost full glasses of water, you should A. ask if you may refill the empty glass and ask the other guests if they would like more water. B. ignore the empty glass and let the guest call you if more water is needed. C. wait until two glasses are empty so you can make one trip. D. wait until all of the glasses are empty so you can make one trip.		14	.496*
99	A. When writing an order, the waiter/waitress should A. arrange the orders to ensure service to the proper person. B. list prices in order from the least to the most expensive. C. place the entrees on the left-hand corner of the check. D. randomly record the orders as they are given.	44	53	.426*
	A. If a guest is in a hurry and orders an entree that has a long preparation time, the waiter/waitress should A. ask the chef to speed up the food preparation on that order. B. say nothing about the time needed to prepare the meal. C. suggest an alternative that you know will be ready sooner. D. tell the guest the length of time needed if asked.	44	53	.403*
	B. An example of selling through suggestions is A. describing foods that go well with the entree ordered. B. explaining descriptively how a food is prepared. C. repeating a customer's order before taking it to the kitchen. D. telling a customer that a beverage is included with the meal.	46	53	.550*
	B. Water glasses and coffee cups should be refilled A. as each course is served. B. after each course is removed. C. as needed during the meal. D. when requested by the guest.	58	33	.558*

TABLE 19 - (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	B. When customers have finished with their main course, the waiter/waitress should A. ask if they would like to have a dessert. B. take them a popular dessert. C. say "you must have a piece of our apple pie." D. take them the check immediately.		26	.456*
	A. After the host seats guests and gives each a menu, the waiter/waitress should A. give the customers a chance to read the menu. B. not go to the table until the customers call. C. go over as quickly as possible to take their orders. D. wait for the host/hostess to take their orders.		26	.478*
104	A. When the salad is served as a separate course, it is placed A. directly above the dinner plate. B. in the center of the cover. C. to the customer's left. D. to the customer's right.		87	.428*
109	A. A rude and noisy customer should be A. asked to leave. B. ignored. C. reprimanded by the manager. D. treated courteously.		80	.346
	B. If the customer has found a foreign object in the food, the waiter/waitress should A. apologize and replace the food at no charge. B. call the manager to verify the situation. C. offer to replace the food at a small charge. D. report the cook at once for carelessness.	50	48	.420*
110	A. When bussing tables, you should A. place all soiled items on a tray. B. put soiled dishes of a kind together. C. brush crumbs onto the floor. D. wipe flatware carefully with a napkin.		73	.287
113	A. When preparing the customer's check, you should A. automatically include in a 15% tip. B. list the food items served. C. list the items served with a grand total. D. itemize each menu item ordered by price.		96	.379*
114	B. When a customer has finished the main course and indicates that no dessert is wanted, the waiter/waitress should A. present the check. B. refill the beverage and ask, "may I get you something else?" C. refill the beverage and present the check. D. use suggestive selling.		73	.303

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
116	8. When using a cash register to make change for a $20 bill, you should A. hold the $20 bill in your hand and count to yourself the change needed. B. place the $20 bill in the cash drawer and count the change to the customer. C. place the $20 bill on the counter and give the change to the customer. D. place the $20 bill on the ledge of the cash register and count to yourself the change needed.		90	.349
122	8. When packing food and supplies for off-premise catering, the last item packed should be A. dishes. B. food. C. flatware. D. serving pieces.		79	.415*

(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported as $p \leq .05$)

Table 21

VOCATIONAL EDUCATION FOR THE HANDICAPPED
TEST ITEMS HAVING ACCEPTABLE LEVELS OF DIFFICULTY AND/OR DISCRIMINATION
N = 97

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
35	A.[1] The primary goal of a food service sanitation program is to A. adhere to standards set by governmental agencies. B. follow the time-and-temperature principle. C. protect the customer from food-borne illness. D. protect the food supply from chemical hazards.	40	53	.437*
36	A. In most food service jobs, fingernails should be A. a fashionable length. B. attractively polished. C. long and tapered. D. short and unpolished.		7	.427*
	A. After washing, hands should be rinsed thoroughly A. by immersing in a deep basin of clean water. B. by immersing in water containing disinfectant. C. under running water from fingertips to wrists. D. under running water from wrists to fingertips.	40	53	.265
38	A. Food service establishments should use foods A. as needed. B. as soon as delivered. C. on a "first in - first out" basis. D. on a "first in - last out" basis.		60	.410*
	A. The danger zone in which harmful micro-organisms grow rapidly is A. 0-32°F. B. 32-45°F. C. 45-140°F. D. 140-212°F.	40	53	.460*
	A. The item most likely to be involved in an outbreak of food-borne illness is A. apricots. B. meat salad sandwiches. C. rice. D. whole-wheat bread.	47	30	.283
51	A. The cutting device used for removing the tops from radishes is a A. cutter. B. grater. C. paring knife. D. peeler.	57	16	.461*

(1) Form 1

(2) Form 2

* $p \le .01$ (other values reported at $p \le .05$)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. The type of oven which has a fan to increase air circulation is a A. convection oven. B. microwave oven. C. pizza oven. D. reconstitution oven.	43	41	.484*
	A. In food service, weights rather than measures are more commonly used because they are A. easier to keep clean. B. easier to locate. C. more accurate. D. more sanitary.	43	41	.428*
	A. When using the range top, it is important to A. replace burners regularly. B. select burner size to fit the pot or pan. C. start cooking on high heat. D. start cooking on low heat.	43	41	.397*
52	B.[2] A freezer should be defrosted A. daily. B. weekly. C. monthly. D. once or twice a year.		77	.704
	A. When storing fruits you should A. ripen apples, avocados, bananas, and pears in the refrigerator. B. refrigerate berries, cherries, and plums immediately after washing. C. store citrus fruits at a cool room temperature. D. store citrus fruits in the refrigerator.		67	.390*
	A. A light, thin, layer of shortening on a grill forming a slick surface, means the grill is A. dirty. B. primed. C. ruined. D. seasoned.		95	.431*
	A. If the freezer stops working, you should A. keep the door shut until repaired. B. open the door and check for thawing hourly. C. put in more cold food to lower temperature. D. remove part of the food to reduce loss.		67	.525*
	A. The blade of the can opener should be wiped with a damp sanitized cloth A. after each operation. B. once each day. C. twice each week. D. once a month.	60	14	.311
56	A. Cans with swelled tops or bottoms should be A. checked for abnormal odor, color, or texture. B. discarded. C. opened and tasted. D. used immediately.		72	.261

TABLE 21- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. The dry storage area should A. be dry and well ventilated. B. dimly lit. C. include space for non-food items. D. have a warm temperature.	57	16	.525*
	A. The product which may be stored in the refrigerator up to three days covered with crushed ice is A. eggs. B. fresh fish. C. fresh meat. D. fresh poultry.		63	.326
60	A. Food measurements are standardized for A. consistent results. B. convenience. C. saving money. D. saving time.		97	.561*
	A. The purposes of standardized recipes is to A. allow creativity on the part of food preparers. B. increase variety in food selection. C. reduce the amount of food preparation needed. D. maintain quality of food items prepared.	40	53	.279
61	A. The cooking term dice means to A. cut into cubes. B. cut into very small pieces. C. form tiny flakes. D. pulverize.	45	34	.453*
	A. Au Gratin means a food A. containing cheese. B. covered with a sauce and topped with crumbs. C. covered with crumbs. D. covered with whipped potatoes.	45	34	.307
65	A. Tools for measuring dry ingredients should have A. a pouring lip or spout. B. a rim above the "full cup" line. C. graduated measurements marked for ounces. D. no rim or pouring spout.		98	.333*
	A. A 32 oz. can yields approximately A. 4 cups. B. 3½ cups. C. 3 cups. D. 2½ cups.	42	46	.548*
66	A. Two cups equal A. 8 ounces. B. 16 ounces. C. 1 quart. D. 3 pints.	45	34	.323

TABLE 21- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. The most accurate method of measuring one cup of milk would be to use a A. coffee cup. B. metal measuring cup. C. one-cup, nested. D. transparent measuring cup.	50	24	.357*
67	A. An example of moist-heat cooking is A. baking. B. braising. C. broiling. D. roasting.	47	30	.398*
69	A. Energy efficiency in appliances can be increased by A. baking several dishes in the oven at once. B. filling refrigerator to capacity. C. keeping the freezer lightly stocked. D. removing items from the refrigerator when needed.		64	.603*
70	A. Spices and herbs should be stored in A. a cool, dry place. B. dry, well lighted place. C. open container. D. the refrigerator.	45	34	.525*
71	A. Tea should be prepared by A. boiling. B. perking. C. simmering. D. steeping.		102	.299
73	A. To prevent the sandwich filling from soaking into the bread, spread the bread with A. cream cheese. B. mayonnaise. C. softened butter. D. spicy mustard.		64	.260
75	A. A good method of cooking vegetables to prevent loss of nutrients is to A. baste with butter and broil. B. cover with chicken broth and boil. C. cut into large pieces and steam. D. dip in batter and fry.	52	23	.423*
76	A. The normal cooking time for most stocks is A. 1 to 4 hours. B. 3 to 5 hours. C. 5 to 6 hours. D. 6 to 8 hours.		92	.404*
77	A. Well-cooked long-grain rice should be A. dry and grainy. B. fluffy and dry. C. fluffy and moist. D. moist and sticky.		78	.406*

TABLE 21- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
79	A. When cheese is overcooked, it becomes A. chewy and flaky. B. grainy and tough. C. smooth and tender. D. tough and stringy.	50	24	.297
80	A. The doneness of a large piece of meat is best tested by A. cutting into the center. B. piercing with a fork. C. using a meat thermometer. D. using a timetable for cooking meat.	45	34	.638*
81	A. In making a soft custard, the correct procedure is to A. add the egg and sugar mixture to the scalded milk. B. add the scalded milk slowly to the egg and sugar mixture. C. beat the eggs until foamy. D. cook over direct heat.	47	30	.542*
82	A. Fried desserts, such as fried pies, are not usually produced in food service businesses "from scratch" because they A. are not a popular dessert. B. cannot be saved from one meal to the next. C. require a large amount of preparation time. D. require special preparation equipment.	50	24	.465*
83	A. When preparing quick breads, fill muffin cups and loaf [illegible]ns A. ¼ full. B. 1/3 full. C. ½ full. D. 2/3 full.		72	.325
	A. When making yeast breads, during the fermentation process the dough A. simply rests and diminishes in same size. B. should at least double in size. C. should remain the same size. D. should triple in size.	50	24	.359*
84	A. Cookie doughs differ from cake batters because they contain more A. fat. B. leavening agent. C. liquid ingredients. D. sugar.		92	.439*
	A. Pie crust should be rolled to a thickness of A. 1/8 inch. B. ¼ inch. C. ½ inch. D. 3/4 inch.		80	.371*

TABLE 21- (cont'd)

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	A. The principles of cake making are basically the same as those for making A. drop cookies. B. pastries. C. quick breads. D. yeast breads.	40	53	.286
85	A. Molded cake decorations are made from A. butter cream icing. B. pastillage or marzipan. C. royal icing. D. white or chocolate fudge icing.		83	.271
88	B. The most suitable garnishes for baked ham are A. chutney and coconut. B. lemon and lime wedges. C. parsley sprigs and mint leaves. D. pineapples, cherries, and cloves.	40	54	.888*
91	A. Equipment commonly used for portioning foods in standardized serving amounts include A. knives. B. ladles. C. measuring cups. D. spoons.		60	.374*
	B. Standard portions A. ensure that everyone gets the same serving size. B. depend on the size of the serving plate. C. apply only to entrees and desserts. D. are in approximate portions to the weight of the customer.	50	41	.763
92	A. Hot foods should be held at A. 40° to 140°F (4.4° to 60°C). B. 40°F (4.4°C) or below. C. 140°F (60°C) or above. D. 165° to 170°F (73.9° to 76.7°C).		18	.334*
93	A. To determine the time to begin preparation of food, A. let each worker develop a production schedule. B. let workers sign up for use of equipment. C. plan back step by step from serving time. D. plan ahead step by step to serving time.		92	.447*
95	B. A well-equipped side stand will A. increase food costs. B. reduce the need for kitchen personnel. C. save trips to the kitchen. D. store all needed items for meal service.		77	.704
	A. The group of tables or seats for which a waiter/waitress will be responsible is known as the A. action area. B. duty area. C. station. D. territory.	48	29	.344*

TABLE 21- (cont'd)

Essential Competency		Test Item	Level of Difficulty	Rank	Point-Biserial r
98	A.	The acceptable exception to the general rules of table service is A. if one person finishes eating before others, remove that person's dishes. B. if one person's food is ready before the others, serve it first. C. slide plates across to persons on far side of a booth. D. when serving a booth, you may reach across one guest to serve another.		80	.474*
	A.	In welcoming guests, the food server's attitude should be A. business-like. B. cool. C. familiar. D. indifferent.		60	.334*
	B.	When seating guests in a restaurant one should seat A. a blind person near the door. B. a family with a child in a highchair out of traffic lanes. C. guests according to their social position or importance. D. noisy, disruptive types next to quieter ones.	50	41	.727
	A.	When seating a group the best seat should usually be offered to the A. elderly lady. B. eldest man. C. youngest lady. D. youngest man.		14	.316
99	A.	For effective selling and good will to the guest, menus should be A. presented as the guests are being seated. B. offered to the guest unopened. C. offered to the guest opened, at eye level. D. presented if the guest requests a menu.		90	.305
	A.	If a guest is in a hurry and orders an entree that has a long preparation time, the waiter/waitress should A. ask the chef to speed up the food preparation on that order. B. say nothing about the time needed to prepare the meal. C. suggest an alternative that you know will be ready sooner. D. tell the guest the length of time needed if asked.		67	.402*
	A.	When writing an order, the waiter/waitress should A. arrange the orders to ensure service to the proper person. B. list prices in order from the least to the most expensive. C. place the entrees on the left-hand corner of the check. D. randomly record the orders as they are given.		66	.423*

Essential Competency	Test Item	Level of Difficulty	Rank	Point-Biserial r
	B. An example of selling through suggestions is A. describing foods that go well with the entree ordered. B. explaining descriptively how a food is prepared. C. repeating a customer's order before taking it to the kitchen. D. telling a customer that a beverage is included with the meal.	40	54	.888*
	A. After the host seats guests and gives each a menu, the waiter/waitress should A. give the customers a chance to read the menu. B. not go to the table until the customers call. C. go over as quickly as possible to take their orders. D. wait for the host/hostess to take their orders.	42	46	.513*
110	A. When bussing tables, you should A. place all soiled items on a tray. B. put soiled dishes of a kind together. C. brush crumbs onto the floor. D. wipe flatware carefully with a napkin.	42	46	.265
114	A. If a party of customers has ordered dessert, the waiter/waitress should A. present the check, then serve dessert. B. serve dessert, present the check, then refill beverages. C. serve dessert, refill beverages, then present the check. D. serve dessert, then present the check.		72	.476*
	A. When the guest is to take the check to the front of the restaurant to pay the cashier, you should A. hand the check to the host and tell him or her to pay the cashier. B. place the check face down on the table to the host's left. C. place the check face down on the table to the host's right. D. place the check face up on the table to the host's right.	40	53	.371*
120	A. A guide to all equipment needed for a specific catered function is a(n) A. order form B. packing list, C. packing receipt. D. shipping list.		83	.336*

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(1) Form 1

(2) Form 2

* $p \leq .01$ (other values reported at $p \leq .05$)

Chapter V

Summary and Recommendations

Summary

Eleven objective tests designed to test the subject area of food and nutrition, including 1,112 multiple-choice test items, were administered to 1,146 students enrolled in vocational home economics education courses in Texas. These courses included Exploratory Homemaking, Comprehensive Homemaking I, Comprehensive Homemaking II, Comprehensive Homemaking III, the Semester Course in Food and Nutrition, and all methods of instruction for occupational home economics: Vocational Education for the Handicapped (VEH), Coordinated Vocational Academic Education (CVAE), Pre-employment Laboratory Education (PELE), and Home Economics Cooperative Education (HECE). Data were analyzed for 820 usable tests representing a 57% return rate.

The sample selected represented a variety of schools in Texas with varying size and geographic location. Data analyses were used to examine and answer five major research questions. The first question was:

1. What is an effective procedure for developing multiple-choice test items that determine students' achievement of specific essential competencies in vocational home economics education?

Items field tested in this study were gathered in two ways: (1) identification and revision of appropriate test items found in the literature and (2) development of test items by the research team based on the essential competencies in the Instructional Framework for Vocational Home Economics Education and information found in state-adopted textbooks. Feedback from a variety of persons, including teachers, advisory committee members, and staff at the Texas Education Agency indicated a greater level of satisfaction of those items developed by the research team specifically for this project.

Also, test items generated by the research team were more discriminating than those test items found in the literature and revised.

Several test items relating to essential competencies written in the psychomotor domain did not indicate a discriminating quality at the .05 level of significance or beyond, as evidenced by those essential competencies in the occupational areas. Therefore, it was concluded that these items may be better assessed by non-testing devices.

All tests developed for the study had a high level of reliability. A major factor contributing to this could be the detailed test administration instructions developed for the study. These instructions served to formalize the test administration procedures, thus reducing errors occuring during this phase of the field study phase.

2. Can the reliability of multiple-choice test items taken by students from all ten educational areas throughout the State of Texas be established?

As previously discussed, all of the tests developed for the study had high levels of reliability. Standardized test procedures in the form of formalized, detailed pre-test administration instructions have been identified as one of the factors contributing to these high levels of reliability. Other factors which may have positively contributed to the reliability of these tests are the heterogenity grouping of most of the student response groups and the length of the tests. With regard to test length, 10 of the 11 tests contained at least 100 items. This provided the opportunity to adequately test those essential competencies best evaluated by objective testing procedures. Exploratory Homemaking has a limited number of essential competencies. This factor in combination with the age of those students enrolled in this course, indicates that tests developed for this course may need approximately

50 test items as opposed to the more traditional 100 items. Based on these findings, the researchers concluded that the reliability of multiple-choice test items can be established for all ten educational areas in the State of Texas.

3. What are some non-testing methods for assessing students' achievement of essential competencies?

A thorough review of the literature was conducted to locate appropriate non-testing devices for essential competencies in the area of food and nutrition in vocational home economics education. Results of this research indicated a paucity of appropriate non-testing devices. Non-testing methods should be particularly effective in assessing competencies in the psychomotor and affective domains. This fact is supported by data analyses which indicate that nearly all of the objective test items that were not discriminating were found in the psychomotor domain. To facilitate the comprehension and development of appropriate non-testing methods, a chapter on the development of non-testing devices is offered in this report. An example was developed in the food and nutrition area for a large majority of the non-testing methods. This chapter should illustrate the various non-testing methods for assessing students' achievement of essential competencies.

4. What evaluation techniques are appropriate for special needs students?

During the field testing procedure, evidence was given that some students in Vocational Education for the Handicapped (VEH) did not respond well to written, multiple-choice test items. The evidence was supported by long-distance phone calls and written statements returned with completed computerized answer sheets by teachers of VEH students. Handicapped students often respond better to visual-based methods of instruction and evaluation vs. language-based methods. Results of this study substantiate the literature that handicapped and disadvantaged students respond much better to non-testing devices than paper and pencil tests.

5. What types of characteristics of evaluative techniques would promote equal access to vocational home economics education?

The multiple-choice test items developed for field testing were free of gender and/or ethnic references. Members of the advisory committee were very helpful in eliminating items that could be possibly considered to be counter to equal access efforts. In addition, there was no negative feedback from teachers regarding discrimination on the basis of gender or ethnic background.

Recommendations

This study has significant implications for vocational home economics education in Texas. With recent legislative mandates in education, there must be valid and reliable methods of assessing students' achievement of essential competencies. This study has been exploratory in nature to determine a procedure in the development and field testing of objective test items to test essential competencies in the area of food and nutrition in all vocational home economics education courses.

Based upon the researchers' experiences during the study, the following recommendations are made:

1) The procedure for developing future test items be changed from revising test items found in the literature to developing test items which correlate the essential competencies in the Instructional Framework for Vocational

Home Economics Education, related home economics curriculum guides, and the appropriate state-adopted textbooks.

2) The validation procedure used in the study should be continued. The panel of experts consisting of representatives in business/industry, secondary teachers who are familiar with the subject area, experts in the subject area at the university level, and the Vocational Home Economics Education Staff at the Texas Education Agency proved to be very effective in validating items.

3) The field testing procedure used in the study including the use of detailed instructions for test administration should be retained since it seemed to be effective. However, the timing should be changed to allow for teachers to receive, administer, and return the completed test items at an appropriate time for them.

4) Non-testing evaluation instruments should be developed, validated, and field tested to determine their reliability. These instruments are needed to assess students' competence in the psychomotor and affective domains of learning. In addition, they are needed to evaluate achievement of students with handicaps and disadvantaged students.

The findings of the study and the recommendations made should assist in evaluating essential competencies in the future, not only in the area of food and nutrition, but also in all other areas of vocational home economics education.

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APPENDICES

APPENDIX A

Members of Advisory Committee

Betty Keethly, City Supervisor
Vocational Home Economics
Waco, Texas 76710

Dr. Gwen Aldredge
Home Economics Department
College of Arts and Sciences
Baylor University
Waco, Texas 78798

Dr. Dewey Mays
Curriculum Director
Fort Worth ISD
Fort Worth, Texas 76107

Dr. Sue Thompson
Home Economics Department
Southwest Texas State University
San Marcos, Texas 78666

Dr. David F. Culclasure, Director
Staff Development and Special Education
San Antonio State Hospital
San Antonio, Texas 78223-0310

Judy Heatherly, Director
Vocational Home Economics Education
Texas Education Agency
Austin, Texas 78752

Gay Nell McGinnis
Occupational Education Specialist
Vocational Home Economics Education
Texas Education Agency
Austin, Texas 78752

Dr. Patsy Hallman
Home Economics Department
Stephen F. Austin State University
Nacogdoches, Texas 75961

Dr. Sue Jones-Butts, R.D.
Home Economics Department
Stephen F. Austin State University
Nacogdoches, Texas 75961

APPENDIX B

Advisory Committee Correspondence
and Meeting Agenda

Texas Tech University

Department of Home Economics Education
Box 4170/Lubbock, Texas 79409-4170/(806) 742-3037

October 3, 1984

Texas Tech University has been awarded a grant by the Texas Education Agency to develop a model for evaluating essential competencies and subcompetencies in the area of food and nutrition, food production, management and services. The major objectives of the study are:

1. To determine and validate evaluation methods contributing to the mastery of selected essential competencies in Vocational Home Economics Education;
2. To develop and validate pencil/paper and performance activities which will determine student mastery of specific essential competencies in Vocational Home Economics Education;
3. To identify essential competencies in Vocational Home Economics Education which could be taught/evaluated through use of computers and/or interactive instructional television (video);
4. To determine valid evaluational techniques appropriate for special needs students; and
5. To point out valid evaluative techniques that would promote equal access to vocational education.

As directors of the project we need your assistance. We would like to invite you to serve on the advisory committee. We felt that representatives from a variety of groups was needed. Your participation as an advisory committee member will involve one or two meetings plus an occasional request for your input about the project by mail. We plan to keep you informed about the project.

The first meeting will be as follows:

DATE: Wednesday, October 17, 1984
TIME: 9:00 a.m. - 12:00 p.m.
PLACE: Room 105
Texas Education Agency Building
1200 East Anderson Lane
Austin, Texas 78752

"An Equal Opportunity/Affirmative Action Employer"

The project will pay your travel according to the Texas Education Agency's travel regulations.

Please let us know if you can be a part of this important group. We hope to see you at our first meeting.

Sincerely yours,

Camille G. Bell
Project Director

Linda R. Glosson
Project Co-Director

Virginia Felstehausen
Project Co-Director

CGB/LRG/VF/bw

AGENDA

DEVELOPMENT OF VOCATIONAL HOME ECONOMICS INSTRUCTIONAL ACTIVITIES

Funded by: The Texas Education Agency
Department of Occupational Education and Technology
Research Coordinating Unit

Place: Room 105
Texas Education Agency Building
1200 East Anderson Lane
Austin, Texas

Date: October 17, 1984

Time: 9:00 a.m.

9:00 - Introductions
Overview of the Project
Research Procedures
Development of the Test Items
Sample of Test Items
Development of Types of Evaluation
Validation of Evaluative Devices
Suggestions for Implementation
Travel Forms

12:00 - Adjourn

Advisory Council

Alternates

1. Judy Hetherly, Director
Vocational Home Economics Education
Texas Education Agency Building
1200 East Anderson Lane
Austin, TX 78752

2. Gay Nell McGinnis
Texas Education Agency Building
1200 East Anderson Lane
Austin, TX 78752

3. Betty Keethly, City Supervisor
Vocational Home Economics
5700 Lakemount
Waco, TX 76710

4. Dr. Gwen Aldredge
Home Economics Department
College of Arts and Sciences
Baylor University
Waco, TX 78798

5. Dr. Dewey Mays
Curriculum Director
Fort Worth Independent School Dist.
3210 W. Lancaster
Forth Worth, TX 76107

6. Jan Hall, Regional Training Instructor
Carl's Jr. Restaurant
11937 Starcrest
San Antonio, TX 78247

7. Dr. Sue Thompson
Southwest Texas State University
San Marcos, TX 78666

8. Dr. David F. Culclasure, Director
Staff Development/Special Education
San Antonio State Hospital
P.O. Box 23310, Highland Hills Station
San Antonio, TX 78223-0310

9. Mr. Don George
Texas Restaurant Association
P.O. Box 1429
Austin, TX 78767

Project Director: Dr. Camille G. Bell
Project Co-Directors: Dr. Linda R. Glosson
Dr. Virginia Felstehausen

College of Home Economics - Home Economics Education Department
Texas Tech University, Lubbock, TX 79409

Texas Tech University

Department of Home Economics Education
Box 4170/Lubbock, Texas 79409-4170/(806) 742-3037

March 4, 1985

Dear :

Thank you for your comments and suggestions on the Food and Nutrition Semester Course test versions. Your input was most helpful and has been appropriately incoporated into the versions to be field tested next month.

Test items for the remaining courses in Consumer and Homemaking Education have been developed. They are enclosed for your inspection and include:

1. Two test versions for Homemaking I
2. Two test versions for Homemaking II
3. Two test versions for Homemaking III
4. One test for Exploratory Homemaking

Your evaluation of these test items will be greatly appreciated. Please indicate any suggestions or other comments on the enclosed copies and return them to us in the self-addressed stamped envelope by March 18, 1985.

Your participation has been wonderful, and the research team is most appreciative for your input.

Sincerely,

Camille G. Bell, Project Director

CGB/bw

Enclosures

cc: Linda R. Glosson
Ginny Felstehausen

"An Equal Opportunity/Affirmative Action Employer"

Texas Tech University
Department of Home Economics Education
Box 4170/Lubbock, Texas 79409-4170/(806) 742-3037

March 11, 1985

Dear :

Enclosed is the final set of items to be evaluated before we initiate the field testing procedures. The Food Production, Management, and Services tests will be administered to students enrolled in the subject areas which involve the occupational methods of instruction. They are:

1. Home Economics Cooperative Education (HECE)
2. Pre-employment Laboratory Education (PELE)
3. Coordinated Vocational-Academic Education (CVAE)
4. Vocational Education for the Handicapped (VEH)

Your evaluation of these test items will be greatly appreciated. Please indicate any suggestions or other comments on the enclosed copies and return them to us in the self-addressed stamped envelop by March 25, 1985.

Again, thank you very much for your continuous and active participation in the project and for providing us with such valuable input.

Warmest personal regards,

Camille G. Bell, Project Director

CGB/bw

Enclosures

cc: Linda R. Glosson
Ginny Felstehausen

Texas Tech University
Department of Home Economics Education
Box 4170/Lubbock, Texas 79409-4170/(806) 742-3037

April 2, 1985

Dear :

Our educational arena probably has not witnessed as much community involvement and support since the Sputnik era. And it is almost impossible for us to thank you enough for your service to this important project.

We realize that this is an extremely busy time of the year and that the last group of test items mailed to you were lengthy and required a considerable amount of time. Even if you can check only part of the items, we would appreciate it. However, if you cannot find time to do this, we understand. It would be helpful to let us know whether you can participate so that we can proceed.

Thank you again for all your time and involvement.

Warmest personal regards,

Camille G. Bell, Project Director

GB/bw

Enclosures

cc: Linda R. Glosson
Ginny Felstehausen

APPENDIX C

Cover Letters Included with
Text Packet Materials

Texas Tech University
Department of Home Economics Education
Box 4170/Lubbock, Texas 79409-4170/(806) 742-3037

TO:

FROM: Judy Hetherly, Director, Vocational
Home Economics Education
Texas Education Agency

Camille G. Bell, Project Director
Linda R. Glosson, Project Co-Director
Ginny Felstehausen, Project Co-Director

The Texas Education Agency has awarded Camille Bell, Linda Glosson, and Ginny Felstehausen a grant to develop a pool of test items related to each of our essential competencies for occupational food service, the food and nutrition specialized course, and the food and nutrition units for exploratory and each of the comprehensive consumer homemaking education courses. To establish validity and reliability, these test items need to be field tested.

Thank you for your willingness to participate in this phase of the Texas Education Agency's effort to develop test item pools for vocational home economics education. Enclosed you will find the following items:

1. One field test version of the test for Exploratory Homemaking, with sufficient copies of the test for the students enrolled in your class(es).

2. Multiple copies of computerized answer sheets which are to be clearly marked as directed.

3. An instruction page which is to be read to the students immediately before administering the test.

4. An answer key for your convenience.

5. A self-addressed, postage-paid envelope which is to be used to return the completed computerized answer sheets to the Home Economics Education Department at Texas Tech University.

Please do not make any marks on the computer answer sheets. If you have any mainstreamed students in your class who will be taking this test, please blacken the circle marked "1" on the test number column located on the left-hand side of those students' computer answer sheets. Leave this column blank for all other students.

Again, your interest and participation in this project are greatly appreciated. If you have any questions, please do not hesitate to contact one of us or Mirfy Mays or Bill White, Research Assistants, at (806) 742-3037.

"An Equal Opportunity/Affirmative Action Employer"

Texas Tech University

Department of Home Economics Education
Box 4170/Lubbock, Texas 79409-4170/(806) 742-3037

TO:

FROM: Judy Hetherly, Director, Vocational Home Economics Education
Texas Education Agency

Camille G. Bell, Project Director
Linda R. Glosson, Project Co-Director
Ginny Felstehausen, Project Co-Director

The Texas Education Agency has awarded Camille Bell, Linda Glosson, and Ginny Felstehausen a grant to develop a pool of test items related to each of our essential competencies for occupational food service, the food and nutrition specialized course, and the food and nutrition units for exploratory and each of the comprehensive consumer homemaking education courses. To establish validity and reliability, these test items need to be field tested.

Thank you for your willingness to participate in this phase of the Texas Education Agency's effort to develop test item pools for vocational home economics education. Enclosed you will find the following items:

1. Two field test versions of the test for Homemaking I, with sufficient copies of each version for one-half of the students enrolled in your class(es).

2. Multiple copies of computerized answer sheets which are to be clearly marked as directed.

3. An instruction page which is to be read to the students immediately before administering the test.

4. An answer key for your convenience.

5. A self-addressed, postage-paid envelope which is to be used to return the completed computerized answer sheets to the Home Economics Education Department at Texas Tech University.

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"An Equal Opportunity/Affirmative Action Employer"

Texas Tech University
Department of Home Economics Education
Box 4170/Lubbock, Texas 79409-4170/(806) 742-3037

TO:

FROM: Judy Hetherly, Director, Vocational
Home Economics Education
Texas Education Agency

Camille G. Bell, Project Director
Linda R. Glosson, Project Co-Director
Ginny Felstehausen, Project Co-Director

The Texas Education Agency has awarded Camille Bell, Linda Glosson, and Ginny Felstehausen a grant to develop a pool of test items related to each of our essential competencies for occupational food service, the food and nutrition specialized course, and the food and nutrition units for exploratory and each of the comprehensive consumer homemaking education courses. To establish validity and reliability, these test items need to be field tested.

Thank you for your willingness to participate in this phase of the Texas Education Agency's effort to develop test item pools for vocational home economics education. Enclosed you will find the following items:

1. Two field test versions of the test for Homemaking II, with sufficient copies of each version for one-half of the students enrolled in your class(es).

2. Multiple copies of computerized answer sheets which are to be clearly marked as directed.

3. An instruction page which is to be read to the students immediately before administering the test.

4. An answer key for your convenience.

5. A self-addressed, postage-paid envelope which is to be used to return the completed computerized answer sheets to the Home Economics Education Department at Texas Tech University.

Please do not make any marks on the computer answer sheets. If you have any mainstreamed students in your class who will be taking this test, please blacken the circle marked "1" on the test number column located on the left-hand side of those students' computer answer sheets. Leave this column blank for all other students.

Again, your interest and participation in this project are greatly appreciated. If you have any questions, please do not hesitate to contact one of us or Mirfy Mays or Bill White, Research Assistants, at (806) 742-3037.

"An Equal Opportunity/Affirmative Action Employer"

Texas Tech University

Department of Home Economics Education
Box 4170/Lubbock, Texas 79409-4170/(806) 742-3037

TO:

FROM: Judy Hetherly, Director, Vocational Home Economics Education
Texas Education Agency

Camille G. Bell, Project Director
Linda R. Glosson, Project Co-Director
Ginny Felstehausen, Project Co-Director

The Texas Education Agency has awarded Camille Bell, Linda Glosson, and Ginny Felstehausen a grant to develop a pool of test items related to each of our essential competencies for occupational food service, the food and nutrition specialized course, and the food and nutrition units for exploratory and each of the comprehensive consumer homemaking education courses. To establish validity and reliability, these test items need to be field tested.

Thank you for your willingness to participate in this phase of the Texas Education Agency's effort to develop test item pools for vocational home economics education. Enclosed you will find the following items:

1. Two field test versions of the test for Homemaking III, with sufficient copies of each version for one-half of the students enrolled in your class(es).

2. Multiple copies of computerized answer sheets which are to be clearly marked as directed.

3. An instruction page which is to be read to the students immediately before administering the test.

4. An answer key for your convenience.

5. A self-addressed, postage-paid envelope which is to be used to return the completed computerized answer sheets to the Home Economics Education Department at Texas Tech University.

Please do not make any marks on the computer answer sheets. If you have any mainstreamed students in your class who will be taking this test, please blacken the circle marked "1" on the test number column located on the left-hand side of those students' computer answer sheets. Leave this column blank for all other students.

Again, your interest and participation in this project are greatly appreciated. If you have any questions, please do not hesitate to contact one of us or Mirfy Mays or Bill White, Research Assistants, at (806) 742-3037.

"An Equal Opportunity/Affirmative Action Employer"

Texas Tech University
Department of Home Economics Education
Box 4170/Lubbock, Texas 79409-4170/(806) 742-3037

March 1, 1985

TO:

FROM: Judy Hetherly, Director, Vocational
Home Economics Education
Texas Education Agency

Camille G. Bell, Project Director
Linda R. Glosson, Project Co-Director
Ginny Felstehausen, Project Co-Director

The Texas Education Agency has awarded Camille Bell, Linda Glosson, and Ginny Felstehausen a grant to develop a pool of test items related to each of our essential competencies for occupational food service, the food and nutritional specialized course, and the food and nutrition units for exploratory and each of the comprehensive consumer homemaking education courses. To establish validity and reliability, these test items need to be field tested.

Thank you for your willingness to participate in this phase of the Texas Education Agency's effort to develop test item pools for vocational home economics education. Enclosed you will find the following items:

1. Two field test versions of the test for the Food and Nutrition semester course, with sufficient copies of each version for one-half of the students enrolled in your class(es).

2. Multiple copies of computerized answer sheets which are to be clearly marked as directed.

3. An instruction page which is to be read to the students immediately before administering the test.

4. An answer key for your convenience.

5. A self-addressed, postage-paid envelope which is to be used to return the completed computerized answer sheets to the Home Economics Education Department at Texas Tech University.

Please do not make any marks on the computer answer sheets. If you have any mainstreamed students in your class who will be taking this test, please blacken the circle marked "1" on the test number column located on the left-hand side of those students' computer answer sheets. Leave this column blank for all other students.

Again, your interest and participation in this project are greatly appreciated. If you have any questions, please do not hesitate to contact one of us or Mirfy Mays or Bill White, Research Assistants, at (806) 742-3037.

"An Equal Opportunity/Affirmative Action Employer"

Texas Tech University
Department of Home Economics Education
Box 4170/Lubbock, Texas 79409-4170/(806) 742-3037

May 6, 1985

TO:

FROM: Judy Hetherly, Director, Vocational	Camille G. Bell, Project Director
Home Economics Education	Linda R. Glosson, Project Co-Director
Texas Education Agency	Ginny Felstehausen, Project Co-Director

The Texas Education Agency has awarded Camille Bell, Linda Glosson, and Ginny Felstehausen a grant to develop a pool of test items related to each of our essential competencies for occupational food service, the food and nutrition specialized course, and the food and nutrition units for exploratory and each of the comprehensive consumer homemaking education courses. To establish validity and reliability, these test items need to be field tested.

Thank you for your willingness to participate in this phase of the Texas Education Agency's effort to develop test item pools for vocational home economics education. Enclosed you will find the following items:

1. Two field test versions of the test for Occupational Home Economics Education, with sufficient copies of each version for one-half of the students enrolled in your class(es).

2. Multiple copies of computerized answer sheets which are to be clearly marked as directed.

3. An instruction page which is to be read to the students immediately before administering the test.

4. An answer key for your convenience.

5. A self-addressed, postage-paid envelope which is to be used to return the completed computerized answer sheets to the Home Economics Education Department at Texas Tech University.

Please do not make any marks on the computer answer sheets. If you have any mainstreamed students in your class who will be taking this test, please blacken the circle marked "1" on the test number column located on the left-hand side of those students' computer answer sheets. Leave this column blank for all other students.

Again, your interest and participation in this project are greatly appreciated. If you have any questions, please do not hesitate to contact one of us or Mirfy Mays or Bill White, Research Assistants, at (806) 742-3037.

APPENDIX D

Detailed Instructions for
Test Administration

INSTRUCTIONS FOR TEST ADMINISTRATION

Study these instructions, the computer answer sheets, and the tests themselves before the test date. Be prepared to answer questions about how to correctly mark the answers on the computer answer sheet.

Read aloud all instructions enclosed in boxes. Please adhere to these directions. Do not answer any questions regarding the specific content of the test.

VERBAL INSTRUCTIONS:

When the students have been seated, say:

> Clear your desk of everything except your pencils.

Allow time for students to clear their desks. Hand each student a computerized answer sheet. Then say:

> The test today is over the material covered in Exploratory Homemaking. Your answers will be placed on computer answer sheets and graded by computer. You should use only a No. 2, soft-lead pencil to mark your answers on the answer sheet. You will need to make all marks heavy and black. Blacken each circle completely, but do not go beyond the line of the circle. If you erase an answer, be sure to erase carefully and completely. An example of how to correctly mark the answers can be found on the back of your answer sheet. Does everyone have at least one soft-lead pencil? Do you have any questions about marking your answers?

Hand each student a copy of the test, face up. Then say:

Leave the test unopened until instructed to begin. This test is being used as part of a project sponsored by the Texas Education Agency. You are asked to provide information about yourself in the first six questions of the test. Answer each to the best of your knowledge. The answers to these questions are to be marked in answer spaces 1 through 6 on your answer sheet. Once you have answered these questions, you are to continue with the 100 multiple choice items Exploratory Homemaking. You should try to answer each question. You will have 50 minutes to finish the test.

If you have a question during the test, please raise your hand and I will come to your desk. If you are found looking at a neighbor's paper, or giving or receiving assistance, your test will be taken up. Be sure to read all directions carefully.

Answer student questions, if any. Then say:

You may now begin.

Do not disturb the students during the test. At the end of the 50 minute testing period, say:

Stop. Put your pencils down and turn your test face down. Pass the answer sheets to the front of the room.

When the answer sheets have been collected, say:

Please pass the tests to the front. Thank you for your cooperation.

Place the answer sheets in the self-addressed, postage-paid envelope. (Do not return answer sheets of any student caught cheating during the test). Mail to Texas Tech University as soon as possible, no more than 5 days after administering the test.

INSTRUCTIONS FOR TEST ADMINISTRATION

Study these instructions, the computer answer sheets, and the tests themselves before the test date. Be prepared to answer questions about how to correctly mark the answers on the computer answer sheet.

Read aloud all instructions enclosed in boxes. Please adhere to these directions. Do not answer any questions regarding the specific content of the test.

VERBAL INSTRUCTIONS:

When the students have been seated, say:

> Clear your desk of everything except your pencils.

Allow time for students to clear their desks. Hand each student a computerized answer sheet. Then say:

> The test today is over the material covered in Homemaking I. Your answers will be placed on computer answer sheets and graded by computer. You should use only a No. 2, soft-lead pencil to mark your answers on the answer sheet. You will need to make all marks heavy and black. Blacken each circle completely, but do not go beyond the line of the circle. If you erase an answer, be sure to erase carefully and completely. An example of how to correctly mark the answers can be found on the back of your answer sheet. Does everyone have at least one soft-lead pencil? Do you have any questions about marking your answers?

Hand each student a copy of the test, face up. Then say:

Leave the test unopened until instructed to begin. This test is being used as part of a project sponsored by the Texas Education Agency. Indicate on your computer answer form the test form you are taking. In the upper right-hand corner of your test you will find either the number "1" or the number "2." On the left side of your computer answer sheet find the section marked "Form." Blacken the circle marked "1" if you have a test marked "Test Form 1." Blacken the circle marked "2" if you have a test marked "Test Form 2." You are asked to provide information about yourself in the first six questions of the test. Answer each to the best of your knowledge. The answers to these questions are to be marked in answer spaces 1 through 6 on your answer sheet. Once you have answered these questions, you are to continue with the 100 multiple choice items about Homemaking I. You should try to answer each question. You will have 50 minutes to finish the test.

If you have a question during the test, please raise your hand and I will come to your desk. If you are found looking at a neighbor's paper, or giving or receiving assistance, your test will be taken up. Be sure to read all directions carefully.

Answer student questions, if any. Then say:

You may now begin.

Do not disturb the students during the test. At the end of the 50 minute testing period, say:

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When the answer sheets have been collected, say:

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Read aloud all instructions enclosed in boxes. Please adhere to these directions. Do not answer any questions regarding the specific content of the test.

VERBAL INSTRUCTIONS:

When the students have been seated, say:

> Clear your desk of everything except your pencils.

Allow time for students to clear their desks. Hand each student a computerized answer sheet. Then say:

> The test today is over the material covered in Homemaking II. Your answers will be placed on computer answer sheets and graded by computer. You should use only a No. 2, soft-lead pencil to mark your answers on the answer sheet. You will need to make all marks heavy and black. Blacken each circle completely, but do not go beyond the line of the circle. If you erase an answer, be sure to erase carefully and completely. An example of how to correctly mark the answers can be found on the back of your answer sheet. Does everyone have at least one soft-lead pencil? Do you have any questions about marking your answers?

Hand each student a copy of the test, face up. Then say:

Leave the test unopened until instructed to begin. This test is being used as part of a project sponsored by the Texas Education Agency. Indicate on your computer answer form the test form you are taking. In the upper right-hand corner of your test you will find either the number "1" or the number "2." On the left side of your computer answer sheet find the section marked "Form." Blacken the circle marked "1" if you have a test marked "Test Form 1." Blacken the circle marked "2" if you have a test marked "Test Form 2." You are asked to provide information about yourself in the first six questions of the test. Answer each to the best of your knowledge. The answers to these questions are to be marked in answer spaces 1 through 6 on your answer sheet. Once you have answered these questions, you are to continue with the 100 multiple choice items about Homemaking II. You should try to answer each question. You will have 50 minutes to finish the test.

If you have a question during the test, please raise your hand and I will come to your desk. If you are found looking at a neighbor's paper, or giving or receiving assistance, your test will be taken up. Be sure to read all directions carefully.

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Read aloud all instructions enclosed in boxes. Please adhere to these directions. Do not answer any questions regarding the specific content of the test.

VERBAL INSTRUCTIONS:

When the students have been seated, say:

> Clear your desk of everything except your pencils.

Allow time for students to clear their desks. Hand each student a computerized answer sheet. Then say:

> The test today is over the material covered in Homemaking III. Your answers will be placed on computer answer sheets and graded by computer. You should use only a No. 2, soft-lead pencil to mark your answers on the answer sheet. You will need to make all marks heavy and black. Blacken each circle completely, but do not go beyond the line of the circle. If you erase an answer, be sure to erase carefully and completely. An example of how to correctly mark the answers can be found on the back of your answer sheet. Does everyone have at least one soft-lead pencil? Do you have any questions about marking your answers?

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If you have a question during the test, please raise your hand and I will come to your desk. If you are found looking at a neighbor's paper, or giving or receiving assistance, your test will be taken up. Be sure to read all directions carefully.

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Read aloud all instructions enclosed in boxes. Please adhere to these directions. Do not answer any questions regarding the specific content of the test.

VERBAL INSTRUCTIONS:

When the students have been seated, say:

> Clear your desk of everything except your pencils.

Allow time for students to clear their desks. Hand each student a computerized answer sheet. Then say:

> The test today is over the material covered in the Food and Nutrition Semester Course. Your answers will be placed on computer answer sheets and graded by computer. You should use only a No. 2, soft-lead pencil to mark your answers on the answer sheet. You will need to make all marks heavy and black. Blacken each circle completely, but do not go beyond the line of the circle. If you erase an answer, be sure to erase carefully and completely. An example of how to correctly mark the answers can be found on the back of your answer sheet. Does everyone have at least one soft-lead pencil? Do you have any questions about marking your answers?

Hand each student a copy of the test, face up. Then say:

Leave the test unopened until instructed to begin. This test is being used as part of a project sponsored by the Texas Education Agency. Indicate on your computer answer form the test form you are taking. In the upper right-hand corner of your test you will find either the number "1" or the number "2." On the left side of your computer answer sheet find the section marked "Form." Blacken the circle marked "1" if you have a test marked "Test Form 1." Blacken the circle marked "2" if you have a test marked "Test Form 2." You are asked to provide information about yourself in the first six questions of the test. Answer each to the best of your knowledge. The answers to these questions are to be marked in answer spaces 1 through 6 on your answer sheet. Once you have answered these questions, you are to continue with the 100 multiple choice items about occupational food service. You should try to answer each question. You will have 50 minutes to finish the test.

If you have a question during the test, please raise your hand and I will come to your desk. If you are found looking at a neighbor's paper, or giving or receiving assistance, your test will be taken up. Be sure to read all directions carefully.

Answer student questions, if any. Then say:

You may now begin.

Do not disturb the students during the test. At the end of the 50 minute testing period, say:

Stop. Put your pencils down and turn your test face down. Pass the answer sheets to the front of the room.

When the answer sheets have been collected, say:

Please pass the tests to the front. Thank you for your cooperation.

Place the answer sheets in the self-addressed, postage-paid envelope. (Do not return answer sheets of any student caught cheating during the test). Mail to Texas Tech University as soon as possible, no more than 5 days after administering the test.

INSTRUCTIONS FOR TEST ADMINISTRATION

Study these instructions, the computer answer sheets, and the tests themselves before the test date. Be prepared to answer questions about how to correctly mark the answers on the computer answer sheet.

Read aloud all instructions enclosed in boxes. Please adhere to these directions. Do not answer any questions regarding the specific content of the test.

VERBAL INSTRUCTIONS:

When the students have been seated, say:

> Clear your desk of everything except your pencils.

Allow time for students to clear their desks. Hand each student a computerized answer sheet. Then say:

> The test today is over the material covered in Occupational Home Economics Education. Your answers will be placed on computer answer sheets and graded by computer. You should use only a No. 2, soft-lead pencil to mark your answers on the answer sheet. You will need to make all marks heavy and black. Blacken each circle completely, but do not go beyond the line of the circle. If you erase an answer, be sure to erase carefully and completely. An example of how to correctly mark the answers can be found on the back of your answer sheet. Does everyone have at least one soft-lead pencil? Do you have any questions about marking your answers?

Hand each student a copy of the test, face up. Then say:

Leave the test unopened until instructed to begin. This test is being used as part of a project sponsored by the Texas Education Agency. Indicate on your computer answer form the test form you are taking. In the upper right-hand corner of your test you will find either the number "1" or the number "2." On the left side of your computer answer sheet find the section marked "Form." Blacken the circle marked "1" if you have a test marked "Test Form 1." Blacken the circle marked "2" if you have a test marked "Test Form 2." You are asked to provide information about yourself in the first six questions of the test. Answer each to the best of your knowledge. The answers to these questions are to be marked in answer spaces 1 through 6 on your answer sheet. Once you have answered these questions, you are to continue with the 100 multiple choice items Occupational Food Service. You should try to answer each question. You will have 50 minutes to finish the test.

If you have a question during the test, please raise your hand and I will come to your desk. If you are found looking at a neighbor's paper, or giving or receiving assistance, your test will be taken up. Be sure to read all directions carefully.

Answer student questions, if any. Then say:

You may now begin.

Do not disturb the students during the test. At the end of the 50 minute testing period, say:

Stop. Put your pencils down and turn your test face down. Pass the answer sheets to the front of the room.

When the answer sheets have been collected, say:

Please pass the tests to the front. Thank you for your cooperation.

Place the answer sheets in the self-addressed, postage-paid envelope. (Do not return answer sheets of any student caught cheating during the test). Mail to Texas Tech University as soon as possible, no more than 5 days after administering the test.

APPENDIX E

Correspondence with Study Participants

Texas Tech University

Department of Home Economics Education
Box 4170 / Lubbock, Texas 79409-4170 / (806) 742-3037

December 12, 1984

Dear :

The Texas Education Agency has awarded Camille Bell, Ginny Felstehausen, and I a grant to develop a pool of test items related to each of our essential competencies for occupational food service, the food and nutrition specialized course, and the food and nutrition units for exploratory and each of the comprehensive consumer homemaking education courses. To establish validity and reliability, these test items need to be field-tested.

During the third week of November, invitations were extended to a select group of secondary teachers throughout the state. We have recieved enough positive responses to our initial request to begin the necessary field-testing. However, it is our desire to obtain the most representative sample possible. Therefore, we are sending you this follow-up request hoping that if you have overlooked the first request, you will still take the opportunity to participate. If, for some reason you are unable to participate, please indicate this on the enclosed postcard and return it to us.

Remember, your participation in the field-testing not only will help us determine the reliability of the items, but also helps you by presenting an informal means of determining whether your students have achieved the essential elements in food and nutrition or in food production, management, and service. All reliable test items will be available to you for your use in evaluating classes upon the completion of the project. In addition, the staff in the Home Economics Curriculum Center will use these tests for a model to develop tests for all subject areas eventually.

Please indicate your willingness to participate and the number of tests you will need on the enclosed self-addressed postcard. The individual results of the tests will not be disclosed to anyone since we are checking only for reliability. Also, the test items will be administered only this one time.

Thank you very much for helping us meet one of our mutual challenges. Best wishes and warmest personal regards.

Sincerely,

Linda R. Glosson
Project Co-Director

"An Equal Opportunity/Affirmative Action Employer"

I am willing to adminster the appropriate food and nutrition test items to ______ students who are enrolled in ____.

Sign name ______________________

Telephone number ______________________

School ______________________ City ______________

The last day of our current semester is ______________.

PLEASE RETURN POSTCARD AS SOON AS POSSIBLE

Texas Tech University

Department of Home Economics Education

January 8, 1985

Ms.
Lorenzo High School
Box 520
Lorenzo, TX 79343

Dear

At the request of the Texas Education Agency, the field testing of the food and nutrition Essential Competencies Test items has been postponed until the spring semester, 1985. If you will be teaching the F&N semester course in the spring, please indicate this on the enclosed card along with the approximate number of students.

Sincerely yours,

Camille G. Bell, Project Director

Linda R. Glosson, Project Co-Director

Virginia Felstehausen, Project Co-Director

CGB/LRG/VF/bw

Enclosure

Box 4170 / Lubbock, Texas 79409 / (806) 742-3037

_____ I will be teaching the F&N Semester Course in the Spring with approximately _______ students enrolled.

_____ I will not be teaching the F&N Semester Course in the Spring.

Sign name ______________________________

Telephone number ________________________

School ____________________________ City ______________

PLEASE RETURN POSTCARD AS SOON AS POSSIBLE.

Texas Tech University
Department of Home Economics Education
Box 4170/Lubbock, Texas 79409-4170/(806) 742-3037

March 11, 1985

Dear Participant:

Since our last correspondence, the research team has been busy developing test items and meeting with the Texas Education Agency and Advisory Committee for our project. As you may recall the Texas Education Agency awarded Linda Glosson, Virginia Felstehausen, and myself a research grant last fall to develop a pool of test items. They are related to each of our essential competencies for occupational food service, the food and nutrition specialized course, and the food and nutrition units for exploratory and each of the comprehensive consumer homemaking education courses.

This is truly an exciting time for education in our state. Our role in developing these items is one of many new and on-going activities taking place in the 1984-85 school year. Your willingness to participate in field-testing the validity and reliability of these items is greatly appreciated and we all will benefit from the endeavor.

As we prepare to mail the test in April, we want to verify that the information contained in our records is accurate. You indicated having _________ students enrolled in ___________________________.

If for some reason this is incorrect, please indicate on the enclosed postcard and return it to us as soon as possible. Otherwise, we will mail a sufficient number of tests for the subject are mentioned above.

Thank you for your time and assistance.

Warmest personal regards,

Camille G. Bell, Project Director

CGB/bw

Enclosure

cc: Linda R. Glosson
Virginia Felstehausen

"An Equal Opportunity/Affirmative Action Employer"

The information shown in your records is INCORRECT.

I have _______ students enrolled in ____________

____

Name: ____________________ Phone: ___/________

School: ______________________________

City: _________________________

NOTE: PLEASE RETURN THIS CARD ONLY IF THE ACCOMPANYING LETTER CONTAINS INCORRECT INFORMATION ABOUT YOU, YOUR SCHOOL OR CLASS(ES).

APPENDIX F

Letter Requesting Non-Testing Forms of Evaluation from Private Industry and Product Promotion Groups

Texas Tech University

Department of Home Economics Education
Box 4170 / Lubbock, Texas 79409-4170 / (806) 742-3037

March 12, 1985

Dear :

Recently faculty members in the Department of Home Economics Education at Texas Tech University received funding for an evaluation study from the Texas Education Agency. The objectives of this study include the location and/or development of formal and nonformal testing instruments for vocational home economics taught at the secondary level.

I am currently searching for nonformal evaluation instruments, such as scorecards, rating scales, checklists, and other types of observational testing devices. Specifically, I am needing to locate any instruments related to the evaluation of food preparation, food service, and/or food preparation/service equipment usage.

Your organization has an outstanding record of promotion of foods and nutrition. I have seen a number of your promotional/educational materials and would be interested in receiving a copy of checklists, score cards, or other evaluation instruments developed by your staff in the foods areas described above. If the instruments are appropriate for use with high school students, would we be able to reproduce, distribute, and/or reference them in the final research report and resulting publications? Information related to the availability and cost, if any, of the instruments would also be appreciated.

Any information and assistance you are able to provide in furthering our endeavor is greatly appreciated. If you have any questions concerning this matter, please do not hesitate to contact me at (806) 742-3037.

Sincerely,

Mary Helen Mays, Ph.D., R.D.
Postdoctoral Research Assistant

"An Equal Opportunity/Affirmative Action Employer"

APPENDIX G

Mailing List of Private Industries and Product Promotion Groups Contacted Requesting Non-testing Evaluation Instruments

America Bakers Association
Consumer Services
1700 Pennsylvania Ave., N.W.
Suite 1700
Washington, D.C. 20006

American Bers Association
Consumer Services
2020 K Street, N.W.
Washington, D.C. 20006

American Dry Milk Institute, Inc.
Consumer Services
130 North Franklin Street
Chicago, IL 60606

American Egg Board
Consumer Services
1460 Renaissance Drive
Park Ridge, IL 60068

American National Cowbelles
Consumer Services
1001 Lincoln Street
Denver, CO 80203

American Potato Board
Consumer Services
555 California Street
San Francisco, CA 94104

American School Food Services
Association
4101 E. Iliff Ave.
Denver, CO 80210

American Sheep Producers Council
Department C.O.
200 Clayton Street
Denver, CO 80206

American Soybean Association
Consumer Services
Hudson, IA 50643

American Spice Trade
Association, Inc.
Consumer Services
580 Sylvan Ave.
P.O. Box 1267
Englewood Cliffs, NJ 07632

Armour and Company
Consumer Services Department
Greyhound Tower
Phoenix, AZ 85077

Best Foods - Consumer Services
International Plaza
Englewood Cliffs, NJ 07632

Betty Crocker Kitchens
General Mills Consumer Center
Box 1113
Minneapolis, MN 55440

Blue Goose, Inc.
Educational Department
P.O. Box 46
Fullerton, CA 92632

Borden's Farm Products
Consumer Services
110 Hudson Street
New York, NY

Borden, Inc.
Consumer Services
180 E Broad Street
Columbus, OH 43215

Cabana Bananas
Consumer Services
3345 Wilshire Blvd. Suite 909
Los Angeles, CA 90010

California Apricot Advisory Board
Consumer Service
1295 Boulevard Way, Suite H
Walnut Creek, CA 94598

California Hawaiian Sugar Company
Consumer Services
1 California
San Francisco, CA 94106

California Prune Advisory Board
Consumer Services
World Trade Center
San Francisco, CA 94111

California Raisin Advisory Board
Consumer Services
P.O. Box 5335
Fresno, CA 93755

California Strawberry Advisory Board
Consumer Services
P.O. Box 269
Watsonville, CA 95072

Campbell Soup Company
Home Economics Division
Campbell Place
Camden, NJ 08010

Carnation Company
Home Service Department
5045 Wilshire Blvd.
Los Angeles, CA 90036

Cereal Institute
Consumer Services
135 S LaSalle Street
Chicago, IL 60603

Chiquita Brands
Consumer Services
Prudential Center
Boston, MA 02199

Cling Peach Advisory Board
Consumer Services
One California Street
San Francisco, CA 94111

Consumers Information Center
Distribution Center
Pueblo, CA 81009

Continental Baking Company
Home Economics Department
P.O. Box 731
Rye, NY

Cooperative Extension,
University of California
Publications Unit, Division of
Agricultural Sciences
University of California
1422 South 10th Street
Richmond, CA 94804

Cornell University
Division of Nutritional Sciences
Media Services
B-10 Martha Rensslaer Hall
Ithaca, NY 14853

Del Monte Kitchens
Del Monte Corporation
215 Femont St.
San Francisco, CA 94119

Evaporated Milk Association
Home Economics Educational Services
910 17th Street N.W.
Washington, D.C. 20006

Extension Service/Home Economics
U.S. Department of Agriculture
Washington, D.C. 20250

Family Circle, Inc.
Consumer Services
488 Madison Ave.
New York, NY 10022

Florida Citrus Department
Consumer Services
P.O. Box 148
Lakeland, FL 33802

Food Fair, Inc.
Consumer Services
Food Fair Building
3175 John F. Kennedy Blvd.
Philadelphia, PA 19101

General Food Corporation
Consumer Center
250 N. Street
White Plains, NY 10625

Green Giant Company
Consumer Services
Le Sueur, MN 56058

Green Giant Company
Home Services
5601 Green Valley Drive
Minneapolis, MN 55437

General Mills, Inc.
Consumer Services
9200 Wayzata Blvd.
Minneapolis, MN 55440

Giant Food, Inc.
Consumer Services
P.O. Box 1804
Washington, D.C. 20013

Grocery Manufacturers of America, Inc.
Consumer Services
145 K Street, N.W. Suite 900
Washington, D.C. 20005

H.J. Heinz Company
Consumer Services
P.O. Box 57
Pittsburg, PA 15230

Home Economics School Service
10000 Culver Blvd., Department 8
Culver City, CA 90230

Hunt Wesson Foods, Inc.
Educational Services
1645 W. Valencia Drive
Fullerton, CA 92634

International Life Sciences
Institute-Nutrition Foundation
1126 16th Street, N.W.
Suite 111
Washington, D.C. 20036

International Multifoods
Consumer Services
P.O. Box 2943
Minneapolis, MN 55402

John Oster Manufacturing Company
Consumer Services
Milwaukee, WI 53217

Kansas Wheat Commission
Consumer Services
1201 N Main Street
Hutchinson, KS 67501

Kellogg Company
Department of Home Economics Services
Battle Creek, MI 49016

Kraft Foods - Educational Department
4626 W. School Street
Chicago, IL 60611

Lamb Education Center
Consumer Services
200 Clayton Street
Denver, CO 80206

Lea and Perrins, Inc.
Consumer Services
1501 Pollitt Drive
Fair Lawn, NJ 07410

League for International Food Education
Consumer Services
1126 16th Street N.W. Room 405
Washington, D.C. 20036

Leslie Foods, Inc.
Consumer Services
P.O. Box 364
Newark, CA 94560

Libby, McNeil, and Libby
Consumer Services
200 S. Michigan Ave.
Chicago, IL 60604

McDonald's Corporation
Consumer Services
P.O. Box 2594
Chicago, IL 60690

NASCO
Consumer Services
901 Jamesville Ave.
Fort Atkinson, WI 53538

National Livestock and Meat Board
Nutrition Research Department
444 N. Michigan Ave.
Chicago, IL 60611

National Macaroni Institute
Consumer Services
P.O. Box 336
Palatine, IL 60067

National Nutritional Foods Association
Consumer Services
7727 S Painter Ave.
Whittier, CA 90602

National Peanut Council
Communications Division, Suite 600
111 E. Wacker Drive
Chicago, IL 60601

National Restaurant Association
Educational Materials Center
1530 N Lake Shore Drive
Chicago, IL 60610

NOCTI
Mrs. Evelyn M. Wells
Coordinator of Student Testing Services
318 Johnson Hall
Ferris State College
Big Rapids, MI 49307

Nutrition Education Service Center
Montclair State College
Upper Montclair, NJ 17043

Nutrition Foundation, INc.
888 17th Street N.W.
Washington, D.C. 2006

Oscar Mayer Food Corporation
c/o Ms. Jean Cowden Public Relations
910 Mayer Ave.
Madison, WI 53704

Pacific Vegetable Oil Corporation
Saffola Products Division
Consumer Services
World Trade Center
San Francisco, CA 94111

Pet Incorporated
Consumer Information
400 S 4th Street
St. Louis, MO 63166

Poultry and Egg Institute of America
Consumer Services
521 E. 63rd Street
Kansas City, MO 64110

Procter and Gamble Company
c/o Ms. Jean Learn, Supervisor,
Educational Services
P.O. Box 14009
Cincinnati, OH 45214

Quaker Oats Company
Consumer Services
Merchandise Mart Plaza
Chicago, IL 60654

Ralston Purina Company
Consumer Services
Checker Board Square
St. Louis, MO 63188

Rice Council for Market Development
Consumer Services
3817 Richmond Avenue
Houston, TX 77027

Safeway Stores, Inc.
Consumer Services
4th and Jackson Streets
Oakland, CA 94660

Society for Nutrition Education
1736 Franklin St.
Oakland, CA 94612

Standard Brands, Inc.
Consumer Services
P.O. Box 2695
Grand Central Station
New York, NY 10017

Stokley-Van Camp, Inc.
Home Economics Department
941 N. Meridan Street
Indianapolis, IN 46206

Sugar Association
Consumer Services
1511 K Street N.W.
Washington, D.C. 20005

Sunkist Growers, Inc.
Consumer Services
P.O. Box 7888 Valley Amnes
Van Nura, CA 91409

Sun Harvest, Inc.
(Formerly Inter Harvest)
Consumer Services
P.O. Box 2115
Salinas, CA 93902

Sweethart Cup
Division of Maryland Cup Corporation
Owings Mills, MD 21117

Swift and Company
Consumer Services
41st and S Laflin Street
Chicago, IL 60609

Texas Cattle Feeders Association
2915 S Georgia
Amarillo, TX 79109

Texas Department of Agriculture
P.O. Box 12847
Austin, TX 78711

The American Dietetic Association
430 N. Michigan Ave.
Chicago, IL 60611

The Banana Bunch
Consumer Services
551 5th Ave.
New York, NY 10017

The Food Processors Institute
(Formerly the National Canners Association)
1401 New York Ave., N.W.
Suite 400
Washington, D.C. 20025

The Pennsylvania State University
Cooperative Extension Service
323 Agriculture Administration Building
University, Park PA 16802

The Pillsbury Company
Department of Nutrition
840 C Pillsbury Building
Minneapolis, MN 55402

The Potato Board
Consumer Services
1385 S Colorado Blvd. Suite 512
Denver, CO 80222

Tupperware Home Parties
Educational Services
P.O. Box 2353
Orlando, FL 32802

Uncle Ben's Food
Consumer Services
P.O. Box 1752
Houston, TX 77001

United Fresh Fruit and Vegetable
Association
Consumer Services
777 14th Street N.W.
Washington, D.C. 20005

United Fruit Company
Consumer Services
P.O. Box 227
Prudential Center
Boston, MA 02199

Washington State Apple Commission
Consumer Services
511 2nd Ave., West
Seattle, WA 98119

Western Growers Association
Consumer Services
3091 Wilshire Blvd.
Los Angeles, CA 90005

Western Iceberg Lettuce, Inc.
Consumer Services
P.O. Box 9123
San Francisco, CA 94129

Wheat Flour Institute
Consumer Services
1776 F. Street, N.W.
Washington, D.C. 20006

Wheat Flour Institute
Consumer Services
114 E. Jackson Blvd.
Chicago, IL 60604

Wilson and Company, Inc.
Advertising-Merchandising
4545 Lincoln Blvd.
Oklahoma City, OK 73105

APPENDIX H

Annotated Bibliography of Non-testing Evaluation Instruments

1. International Multifoods
Multifoods Tower
Box 2942
Minneapolis, MN 55402
Attention: Diane Wieland
Communications Manager
Consumer Products Division

Instrument: Score Card
Title: "Peanut Butter Taste Test"
Area: Foods
Purpose: A five-page evaluation form used for consumer evaluation of peanut butter for commercial distribution. Used as part of blind taste tests for a marketing program, the scale is lengthy with considerable space for judge's comments.

Instrument: Rating Scale
Title: "Food Preference Analysis Sheet"
Area: Foods
Purpose: This one page instrument is used to determine consumer attitudes toward various foods. Four dimensions are judged: flavor, appearance, overall preference, and off-flavor, using a five or nine point scale. Additional comment space is provided.

** Designed for commercial foods development and marketing, these instruments may be used as models for the development of rating scales used in the classroom. No cost or limitations on usage were indicated by supplier.

2. Texas Tech University
University Food Services
Lubbock, Texas 79409
Attention: Holly Wainscott

Instrument: Scorecard
Title: "Sample Evaluation"
Area: Foods-commercial
Purpose: Used by the university food services to evaluate foods being considered for purchase on bid basis. Space is given for up to 5 samples being judged on color, flavor, texture, uniformity, and overall appearance. Space is provided for a total score for each sample and comments.

Instrument: Checklist
Title: "Product Evaluation Report"
Area: Foods-commercial
Purpose: Used in dormitory food service to determine customer acceptance of foods served. Products are judged to by satisfactory or needing correction on four points: flavor, texture or consistency, appearance, and yield. Limited space is allowed for comments. Customer reaction to products in terms of acceptance are checked also.

** These short and concise forms are applicable to occupational foods "as is" as a teaching aide in purchasing and in product evaluation. The form for "sample evaluation" could also be used in consumer homemaking as a teaching technique for brand comparisons, such as evaluating national, store, and generic brands of canned fruit. The "Product Evaluation Report" may not be effectively used by consumer homemaking students because it does not provide any "benchmarks" of quality for the characteristics being evaluated. No cost or limitations on usage were indicated by supplier.

3. Cooperative Test Division
Educational Testing Service
20 Nassau Street
Princeton, NJ

Device: Scorecards
Title: "Minnesota Food Scorecards"
Area: Foods
Purpose: A set of 57 scorecards developed to provide rapid scoring of various foods including breads, beverages, egg dishes, cakes, frostings, candies, meats, frozen desserts, pies, pastries, meringues, puddings, salads, vegetables, and sauces. Tested, these scorecards provide a high level of objectivity and are useful in helping students attain satisfactory standards. Each card contains the major characteristics of the product and a three point scale. Descriptors of the least desirable and most desirable qualities of the characteristic are given with space to note a score for each factor and a total score for the product.

** Developed by Clara Brown Arny and others at the University of Minnesota, these cards are highly respected and considered excellent examples of non-testing devices in the area of food preparation. The cards could be used by both consumer and vocational homemaking students. Because of the puslishing date of this packet, cost and availability are uncertain. A set of scorecards is on file with the Department of Home Economics Education, Texas Tech University.

4. National Dairy Council

Device: Checklist
Title: Personalized Nutrition Plan: Adult Nutrition Plan
Area: Nutrition
Purpose: A series of checklists in a workbook format, designed to assist students in evaluating their current nutrition intake and to develop a nutrition plan oriented toward the students' nutritional needs, nutritional concerns, and lifestyles. The booklet asks students to:

1. check foods they eat from the core food groups,
2. plan a daily food pattern by indicating the foods from the core food groups eaten most days, the amount eaten, and the number of servings for each group consumed,

3. compare their typical food pattern against the recommended intake and develop a plan for diet improvement, and
4. monitor their consumption of extra foods: those high in fat, sugar, salt, and alcohol.

** Developed by the National Dairy Council of California, these booklets were designed for use in conjunction with instruction by a nutrition expert. The format provided is a simple, thorough, and relatively quick means of evaluating one's personal nutrition status on a global level. For maximum effectiveness, teacher instruction and follow-up should be used with this instrument. There is a cost attended to the booklets. Local Dairy Council or AMPI representatives may be able to provide you with instruction on the booklet's use and copies for your classroom.

5. Cooperative Extension Service
Kansas State University
Manhattan, Kansas 66502

Device: Scorecards
Title: "Product Evaluation Study Guide for Doughs and Batters"
Area: Foods
Purpose: Provided by the Kansas Wheat Commission, this manual was developed by food and nutrition experts at Kansas State University as a guide for judges and participants in 4-H foods competitions. The guide itself is well-written. It includes general guidelines for judging food products, definition of terms used in scorecards, illustrative words related to each characteristic, and detailed standards and possible causes of failure for biscuits, muffins, fruit/nut breads, yeast breads, and foam cakes, included for each type of product. Differences between scorecards for a given product are the time allowed for judging, the use of the results, and the information needed from the evaluation.

Device: Scorecard
Title: "Judge's Guide for Baked Foods"
Area: Foods
Purpose: Also provided by the Kansas Wheat Commission, this publication is a more concise version of the above mentioned reference. Its concentration is on guidelines for judging baked products in competition and the standards for each food. The scorecard is a "shell" which is generic to any type of baked product. The scorecards list five major characteristics of quality: appearance, texture or consistency, tenderness, flavor, and overall eating quality. A five-point scoring system is provided with space to document comments justifying the assigned score. Space for a final score is also provided.

* While both references are recommended, "Product Evaluation Study for Doughs and Batters" may be more usable with secondary homemaking students. As a reference, the information concerning specific qualities for various baked goods is concise and thorough. The scorecards provided for each product illustrate varying levels of complexity in judging foods and allow the teacher to select the instrument most appropriate for his/her

students and the objective of the lesson. The "shell" scorecard included in the "Judge's Guide for Baked Foods" may be difficult for younger, less experienced students. The scorecard's undirected nature may lend itself more to assisting students in their development of evaluative skills for food products. It could also be utilized to test the more experienced students' abilities to judge food products through justification of their scoring of baked items. No cost or usage limitations were noted by supplier.

6. The Proctor and Gamble Company
   Public Affairs Division
   P. O. Box 599
   Cincinnati, Ohio 45201
   Attention: Jean A. Learn (Miss)
   Program Manager
   Educational Services

Devices: Scorecards
Title: "Food Preparation" Teaching Unit
Area: Foods
Purpose: Part of a instructional kit, the scorecards are available for pastry, cake, biscuits, cornbread, and fried foods. Various quality characteristics with descriptors given for each. Students are allowed to judge each characteristic and score the product based on a suggested scoring system. A space for a total score is available as well as space for additional comments. Short essay questions are given at the end of each scorecard. These assist the students in exploring their knowledge of food preparation, substitutions, and possible solutions to problems in food preparation.

** This teaching kit is organized into six modules which discuss nutrition, meal management, basic food preparation, baking skills, frying skills, and microwave cooking with an emphasis on baking. Included in the packet are an Educator's Resource Guide; student worksheets, which include the rating scales; masters for overhead transparencies; and a concept building poster. The scorecards are well written and should be usable by most secondary homemaking students. Of interest to consumer homemaking teachers is the section of the teaching kit which explores careers in the food service industry. The cost for the unit is $4.50.

7. Kellogg Company
   Battle Creek, Michigan 49106
   Attention: Lynn Vander Meuler, R.D.
   Products Communications Specialist

Instrument: Non-classifiable
Title: "Recipe Evaluation"
Area: Foods
Purpose: A short, concise recipe evaluation form designed for commercial use in recipe evaluation. The format of the instrument allows for open ended comments related to appearance, texture or consistency, and flavor.

A space for suggestions to improve the product is also available. The rater is asked to rate the product excellent, very good, acceptable, or not acceptable. Space for identifying information is available.

Instrument: Non-classifiable
Title: None
Area: Foods
Purpose: A recipe evaluation form/rater summary sheet, this form provides space for identifying information as well as rater's comments on the product's appearance, flavor, consistency or texture, practical time/cost, and evaluation/recommendations. These characteristics are rated for three testings of the product.

Instrument: Non-classifiable
Title: "Kellogg's Family Size Recipe Evaluation"
Area: Foods
Purpose: Designed for recipe preparation in a test kitchen setting, this form summarizes identifying information, time required for food preparation, and periods during preparation when other work can be done, such as during chilling or baking. Questions related to ingredients, method, and yield are answered, mostly with "yes-no" responses. A summary of evaluation section allows the rater to provide further information on the quality of the product.

** None of these instruments are appropriate for classroom use with the possible exception of the "Kellogg's Family Size Recipe Evaluation" form. This form has some characteristics of a checklist and could be revised into a true checklist format for student use. Otherwise, these instruments have been designed for commercial test kitchen use and would be difficult to modify for classroom use. No cost or limitations on usage were indicated by the supplier.

8. "Discovering Food: Teacher's Guide"; 1982.
by Connie R. Sasse
Bennett & McKnight Publishing Company,
Peoria, Ill.

Instrument: Scorecards
Title: "How Do You Rate?"
Area: Foods
Purpose: A series of scorecards for a variety of foods ranging from beverages to yeast breads have been designed for use by younger students. The characteristics being evaluated are stated in full sentence questions. The rating range from excellent to poor with each level assigned a value. The student is asked to read the question, rate the product, and total the score. The statements are clearly written and easily understood by the student.

** Ideal for classroom use, and most appropriate for younger students. Costing information is unavailable. Reproduction of scorecards may be limited by copyright on materials. Please consult publisher for further information.

and evaluation/recommendations. These characteristics are rated for three testings of the product.

Instrument: Non-classifiable
Title: "Kellogg's Family Size Recipe Evaluation"
Area: Foods
Purpose: Designed for recipe preparation is a test kitchen setting, this form summarizes identifying information, time required for food preparation, and periods during preparation when other work can be done, such as during chilling or baking. Questions related to ingredients, method, and yield are answered, mostly with "yes-no" responses. A summary of evaluation section provides the rater to provide further information on the quality of the product.

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9. Texas Agricultural Extension Service
United States Department of Agriculture
The Texas A&M University System
College Station, Texas 77843
Instruments Provided by:
Lynda Lynch
County Extension Agent
Lubbock, Texas

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Instrument: Scorecards
Title: "4-H Food Show Score Card-Senior Division"
Area: Foods
Purpose: The scorecards are used by food show judges to evaluate foods demonstrated or entered in local 4-H food shows. A space for identifying information is provided. Based on the food exhibited and the interview done, scores are assigned for quality, recipe, preparation principles, menu prepared, food habits of participant, personal appearance of participant, and his/her effectiveness as a communicator. Each factor has an ideal score assigned to it, but many of the factors do not have descriptive words or phrases which would provide the evaluator with guidelines for an accurate evaluation. Two additional sections, related to a project information sheet in an in-depth analysis of the menu, are both submitted prior to the food show. A key provides information about point values assigned.

Title: "4-H Food Show Scorecard-Junior Division"
Area: Foods
Purpose: The overall purpose of this evaluation instrument is the same as the previous scorecard. Because it is used in evaluating younger food show participants, the three main areas evaluated, the exhibitor, the food, and the menu are accompanied by a series of descriptive phrases which provide guidance to judges in their evaluation. A key indicating the point values and the corresponding values are indicated.

** Because of the objective for using these instruments, it is doubtful that they could be modified for classroom use.

10. Ketchum Food Center
55 Union Street
San Francisco, CA 94111
Attention: Ms. Dorothy Nicholson
Test Kitchen Manager

Instrument: Questionnaire
Title: "Recipe Evaluation Questionnaire"
Area: Foods
Purpose: Designed for use by consumers preparing recipes in their home kitchens, the one page questionnaire is designed to gain information about the amount of time required for preparation; how understandable a recipe is; cost; the product's taste, texture, appearance, appetite appeal, and economy appeal (based on the evaluator's perceptions); and general evaluator suggestions or comments.

Instrument: Rating Scale
Title: "Seafood Product Tasting"
Area: Foods
Purpose: Used by a panel of foods experts for new product evaluation of a commercially prepared seafood product. The rating scale includes characteristics such as aroma, taste, texture, ingredients, appearance, and packaging. Under each characteristic are several factors which the food expert evaluates. Space for additional comments and opinions about the product's potential consumer acceptability is provided.

** Because they have been designed for use in commercial food manufacturing setting, the instruments are inappropriate for classroom use. They could be modified, but given the specificity of the product to be evaluated (seafood) and the availability of more appropriate instruments, this is not recommended. No cost and limitations on usage were indicated by the supplier.